ALL AMERICAN ATHLETE

THE MAGAZINE FOR FITNESS AND ATHLETIC CONDITIONING OCTOBER / 75c

STRENGTH TRAINING FOR ATHLETIC FITNESS ☐ PROTECTIVE MUSCLE FOR THE NECK ☐ 190-LB. COLLEGIAN "MUSCLES UP" TO ALL-PRO ☐ BUILDING LEG POWER AND JUMPING ABILITY ☐ PROTEIN NEEDS OF ATHLETES

A personal message from Joe Weider, Trainer of Champions

Weight Training Can Help Make You A Champion Athlete!

Weight training won't do it all . . . but it is the most effective way to increase a prime requisite for athletic success —*Strength!* In addition, strong muscles developed by weight training help resist injury, including injury to joints and vital internal organs.

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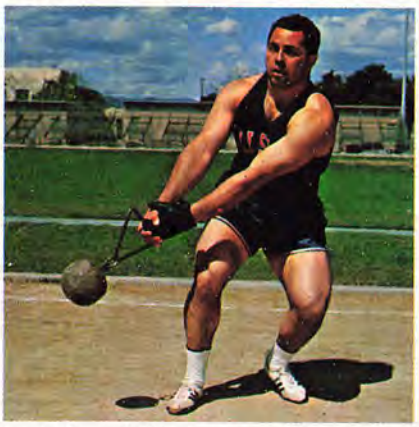
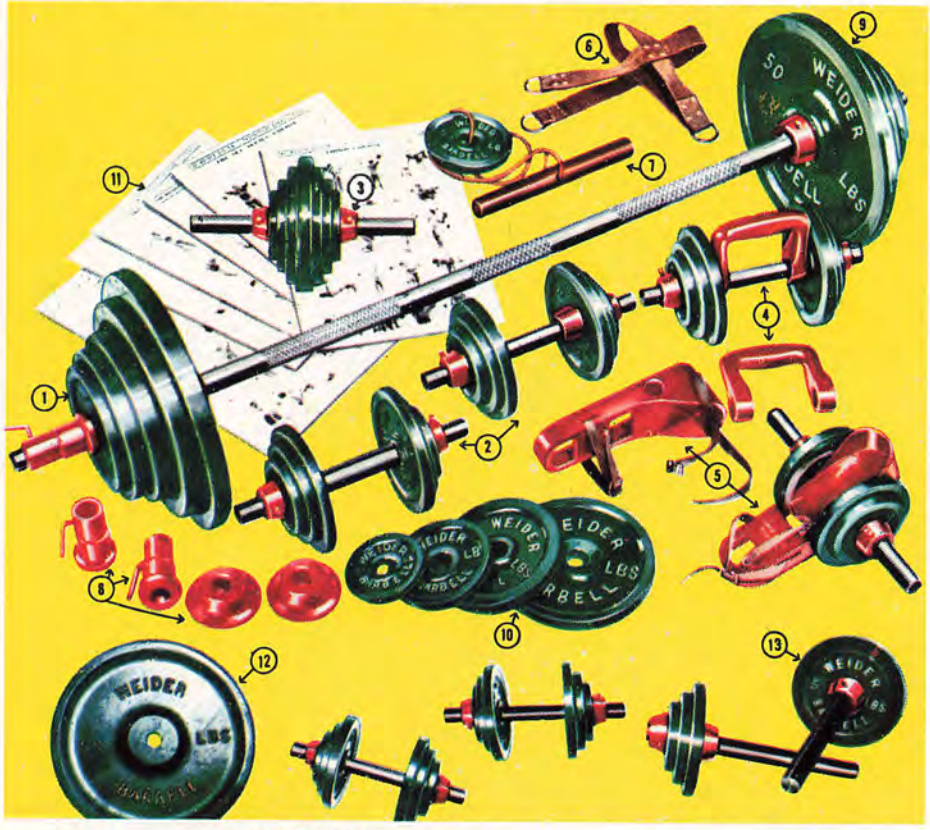


an underweight or overweight athlete. It maintains peak fitness through off-seasons, making it easier to regain competition condition and minimizing injuries or strains upon returning to specialized sports training.

Speaking from a background of 30 years dedicated to the development of methods for producing superior physical fitness, I can state with complete assurance that weight training with the Weider system can help you become a champion, just as it has helped thousands of other athletes. Next to actual practice of your individual sport, nothing is more important among champion-building activities than weight training. I'm so sure that investing time in weight training and a few dollars in one of our lifetime barbell sets is worthwhile that I stand behind every Weider Aristocrat Big 16 Home Gym training set we sell. Select the exact set you need and order it right now. Use the equipment as directed to achieve the improvement you want. If weight training the Weider way does not increase your strength and endurance, and improve your general fitness, you can return the weights for a full refund.



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- Barbell set for strength and power
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- Swingbell for steel spring torso muscles
- Kettlebells for shoulder specialization
- Health boots for muscular legs, stable knees, and a trim midsection
- Headstrap for a strong neck
- Forearm apparatus for a powerful grip

PLUS: World's greatest weight training courses—the ones used by Olympic champions and scores of All-American and professional athletes. Includes course book describing all you need to know about weight training and six illustrated wall charts depicting more than 50 exercises.

FREE: Lifetime Advisory Service for unusual problems. Whenever you need extra expert assistance, our staff is ready to help. This service is free to purchasers of Weider Aristocrat "Big 16" Home Gym training outfits.

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Dept. 375–109

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1220 Fifth Street
Santa Monica, Calif.

Enclosed is $..... in payment for the Weider Aristocrat "Big 16" home training outfit checked below, plus the free training courses.

- ☐ 120 lbs. SUPERIOR "Big 16" and Courses $31.98
- ☐ 170 lbs. SUPERIOR "Big 16" and Courses $40.98
- ☐ 240 lbs. "Big 16" and Courses $44.95
- ☐ 340 lbs. "Big 16" and Courses $59.95
- ☐ 240 lbs. SUPERIOR "Big 16" and Courses $51.95
- ☐ 340 lbs. SUPERIOR "Big 16" and Courses $65.95

Rush My Set To:

NAME..... AGE.....

ADDRESS .....

CITY..... STATE..... ZIP.....

(All sets sent F.O.B. Warehouse)

New Jersey residents add 3%,
California residents add 4% sales tax to total of order.

UNLEASHED PROTEIN! REALLY WILD!

A PROTEIN
BY ANY OTHER NAME
IS TAME

WEIDER'S WILDCATS

THE ADVANTAGES SOME WILDCAT BODYBUILDERS HAVE OVER OTHERS

The champions know that without protein they wouldn't have a single muscle—bone—nerve—blood cell—or any other body part. You can't live without it . . . the proteins are your body's building blocks. They are what the champions feed and deliver to their dynamic muscles **all day long** . . . in a 'bomber's load,' which the average bodybuilder may fail to do. And that's why he fails to build 'swingin' muscles like the champions!

STARTLINGLY NEW!

"PROTEIN AND BROMELAIN"

Makes All Other Protein Supplements Obsolete!

Here's the King of Proteins that the champions eat and drink during the day to supplement their protein diet . . . helping them feed and deliver rich protein to their muscles **throughout the day!** WHY? Because we've added an 'activator punch' to our protein that feeds your muscles faster with the stuff wildcat bodybuilders **need all day long!** We've added **Bromelain** to our fantastically rich protein. It's derived from a pineapple enzyme that helps activate protein for better digestion, and insures that you get as much protein from every protein-drink or tablet as possible, thus avoiding protein waste. That's another reason why the champions are so wild about **Protein and Bromelain** . . . the bromelain helps guarantee them a blast of protein power for wildcat musclebuilding action whenever they need it during the day, and during their workouts.

ESPECIALLY MADE FOR BODYBUILDERS

Not only does PROTEIN/BROMELAIN help feed your muscles all day long . . . not only does it carry a 'protein activator' . . . it is also low in fats and carbohydrates . . . in calories, too . . . so as not to hinder your muscle building/shaping program. When it's WEIDER . . . USE IT WITH COMPLETE CONFIDENCE.

HERE'S UNLEASHED PROTEIN THAT'S REALLY WILD!

It's the unleashed, high-quality protein the champions use daily to get full value of the protein they eat. **Protein and Bromelain** contains **all** the essential amino acids (protein 'building blocks') and is made from natural-organic sources that makes it really wild! 6 tablespoons, when taken daily, feeds your muscles approximately 27 grams of complete protein, and contains the following amounts of amino acid: Arginine 1320 mgs, Histidine 330 mgs, Threonine 990 mgs, Valine 1380 mgs, Leucine 2100 mgs, Isoleucine 1260 mgs, Lysine 1680 mgs, Methionine 510 mgs, Phenylaniline 1140 mgs, Tryptophane 300 mgs, Serine 570 mgs, Glutamic Acid 2280 mgs, Proline 600 mgs, Glycine 480 mgs, Alanine 480 mgs, Cystine 150 mgs, Tyrosine 420 mgs, Aspartic Acid 1500 mgs, and the Enzyme Bromelain (1:10) 240 mgs.

It's also delicious with milk (boosts the protein content still higher!), orange juice, tomato juice, cereals . . . and in cooking and baking. **Also available in tablet form** . . so stop nibbling 'junk sweets.' Feed your muscles protein like the champions do, **all day long!** Be a Protein/Bromelain 'nibbler' . . . tastes like candy and comes in 3 husky 'wildcat' flavors: **chocolate, vanilla** and **strawberry**. And "Protein/Bromelain" doesn't cost you a penny more than inferior brands!

When there is a Protein So Strong, So Powerful, So Delicious, So Wild, So Unleashed . . . shouldn't you switch today and give your body a double 'protein activator boost' . . . just as the champions do, so that you, too, can start today feeding your muscles all-day protein and take advantage of a 'secret' the champions use daily? YOUR BODY NEEDS IT!

WEIDER WILDCATS, Dept. 34-109
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Weider Barbell Co.
1220-Fifth St.
Santa Monica, Calif. 90401

Dear Joe: Send me your Unleashed Protein that's really wild! I've checked the order I want below and have enclosed $.....

☐ **3-MONTHS OF UNLEASHED PROTEIN**.....**Only $8.00**
Check One: ☐ Tablets ☐ Powder
Check One: ☐ Chocolate ☐ Vanilla ☐ Strawberry
(We pay postage)

☐ **1-MONTH TRIAL SIZE OF UNLEASHED PROTEIN**..... **$3.00**
Check One: ☐ Tablets ☐ Powder
Check One: ☐ Chocolate ☐ Vanilla ☐ Strawberry
(add 25c postage)

NAME (please print clearly) AGE

ADDRESS

CITY STATE ZIP

Calif. residents add 5% tax (Sent Freight Collect)

Get the angle on athletic power . . .

. . . with the Dual-Purpose Bench

designed for straight-away strength building while set flat and for special applications while set on an incline. Supine pressing while lying flat is a favorite exercise of athletes in all sports, from football and decathlon men to swimmers. Incline pressing develops great strength for shot putting and discus throwing, and protective muscle across the upper chest and shoulders for athletes in contact sports. The Weider Dual-Purpose Bench weighs less than 20 pounds, but supports half a ton safely. Costs only **$32.98**, including courses, a price you'd ordinarily pay for a single-use, old-fashioned flat bench. Don't delay; use the coupon below to order yours today . . .

Used And Endorsed By Power Lifters

including courses

FREE: *Training courses valued at $15 sent with your order. Every flat, incline, and decline bench exercise with barbells and dumbbells is shown in this 128-page booklet, illustrated with more than 300 photos.*

FOR UPPER BODY POWER—MAIL COUPON

WEIDER BARBELL CO. 801 Palisade Ave. Union City, N.J. Dept. 341-109	(West of the Rockies) WEIDER BARBELL CO. 1220 Fifth Street Santa Monica, Calif. 90401

Enclosed is my check or money order for **$32.98** for which please rush my Dual-Purpose Bench and training courses.

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Address .....

City..... State..... Zip.....

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(Price is F.O.B. our warehouse.)

New Jersey residents add 3%, California residents add 5% sales tax

ALL AMERICAN ATHLETE

VOLUME 10
NUMBER 5
OCTOBER, 1969

The Magazine For Fitness And Athletic Conditioning

WHAT'S IN THIS ISSUE TO KEEP YOU FIT AND IN CONDITION

TO KEEP YOU IN CONDITION

Strengthen Your Neck for Athletic Fitness ..... *by Clarence Ross* 23
Conditioning for Sports ..... *by Jess Jarver* 28
Ex-Football Player Keeps in Shape ..... *by Jim Murray* 37
Training for Leg Power and Jumping Ability ..... *by James R. Hanley* 44

FOR BUILDING YOUR ULTIMATE POWER

The Gerry Philbin Story ..... *by Jay Van Zandt* 14
Explosive Power for Decathlon Performers ..... *by John P. Jesse* 19
Power Pack Your Back with Deadlift Training ..... *by Joe Weider* 38
Curt Harper: How He Trains ..... *by James R. Hanley* 46

NUTRITION FOR GETAWAY FITNESS

The Training Table ..... *by John P. Jesse* 13
Protein Needs of an Athlete ..... *by George Frenn & Ben Weider* 40

SPEEDY IDEAS FOR BETTER PERFORMANCES

Editorial: Doing Your (Worthwhile) Thing ..... *by Jim Murray* 7
Sports Research Center ..... *by John P. Jesse* 9
Ask the Coach ..... *by Richard G. Layman* 27
The Great Power Clean Contest—
Hammer Thrower vs. Shot Putter ..... *by Dick Tyler* 32

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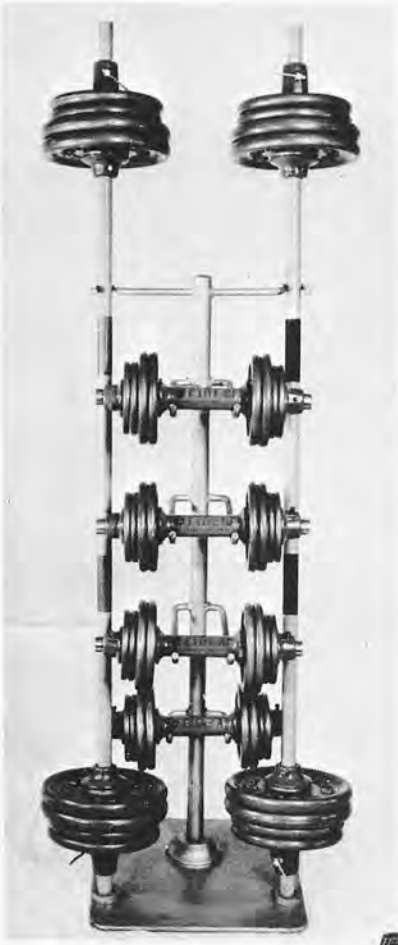

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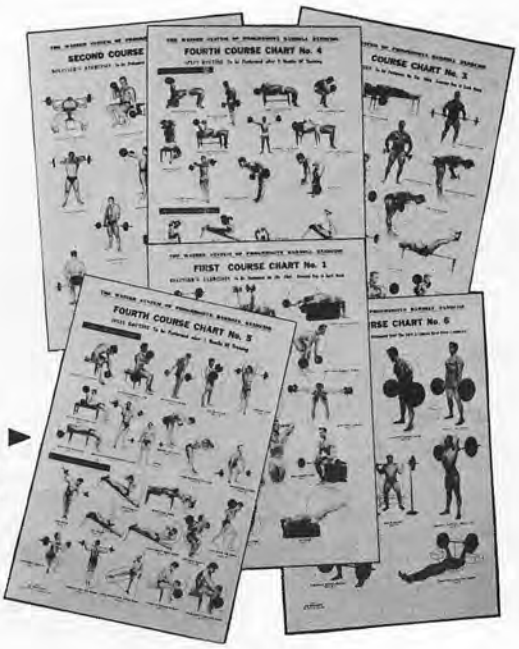
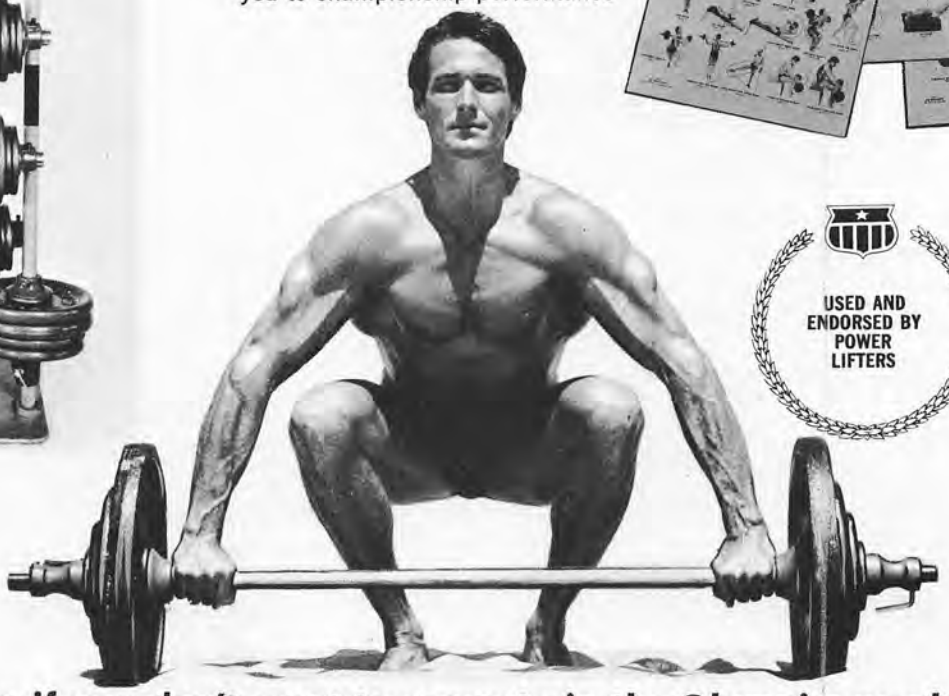
— comes complete with special courses which help guide you to championship performance ►



USED AND ENDORSED BY POWER LIFTERS

And even if you don't want to compete in the Olympics wouldn't it be good to have the body of a champion anyway?

THE PAST QUARTER CENTURY has seen an explosive revolution of record-breaking sports achievement, largely powered by weight trained muscles. The set system of muscle building, which is akin to the interval system used in track and swimming, was pioneered and publicized by Weider Publications. A quarter century of leadership in developing the most effective strength training methods is distilled into the Weider training courses, included FREE with each purchase of a Weider Barbell set.

FROM THE DECATHLON TO PRO FOOTBALL, champion athletes extol the merits of the Weider approach to power training with weights. Exercises developed by Weider have proved to be the best, quickest, and most effective way to build all around muscular development for athletic success. These exercises are shown clearly and graphically in the courses included with all Weider Barbells.

PRECISION-BUILT WEIDER BARBELL SETS, the aristocrats of exercise equipment, are made for a lifetime of hard use. Every Weider Aristocrat set includes a 5- or 6-foot bar; quality chrome sleeve; semi-steel plates—not brittle grey iron—from 1½ to 50 pound sizes. Suregrip steel barbell collars for quick plate changes with dependable locking in place; and two steel dumbbell/swingbell bars with chrome sleeves and collars with every combination set.

AS LOW AS $24.95

FOR THE 110-POUND COMBINATION, with factory-to-you savings. Fifteen dollars worth of muscle-building courses and six charts FREE — no extra charge for the courses when you order any of the sets listed below.

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Dept. 326-109

Send me the specially-priced Aristocrat set checked below, for which I enclose full payment. Include the FREE $15 worth of muscle building courses and six wall charts.

- ☐ **110-lb Combination Set with courses** $24.95
- ☐ **160-lb Combination Set with courses** $33.95
- ☐ **210-lb Combination Set with courses** $42.95

✓ **Check here, choice of ☐ Vinyl or ☐ Cast Iron Sets.**

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Address.....

City..... State..... Zip.....

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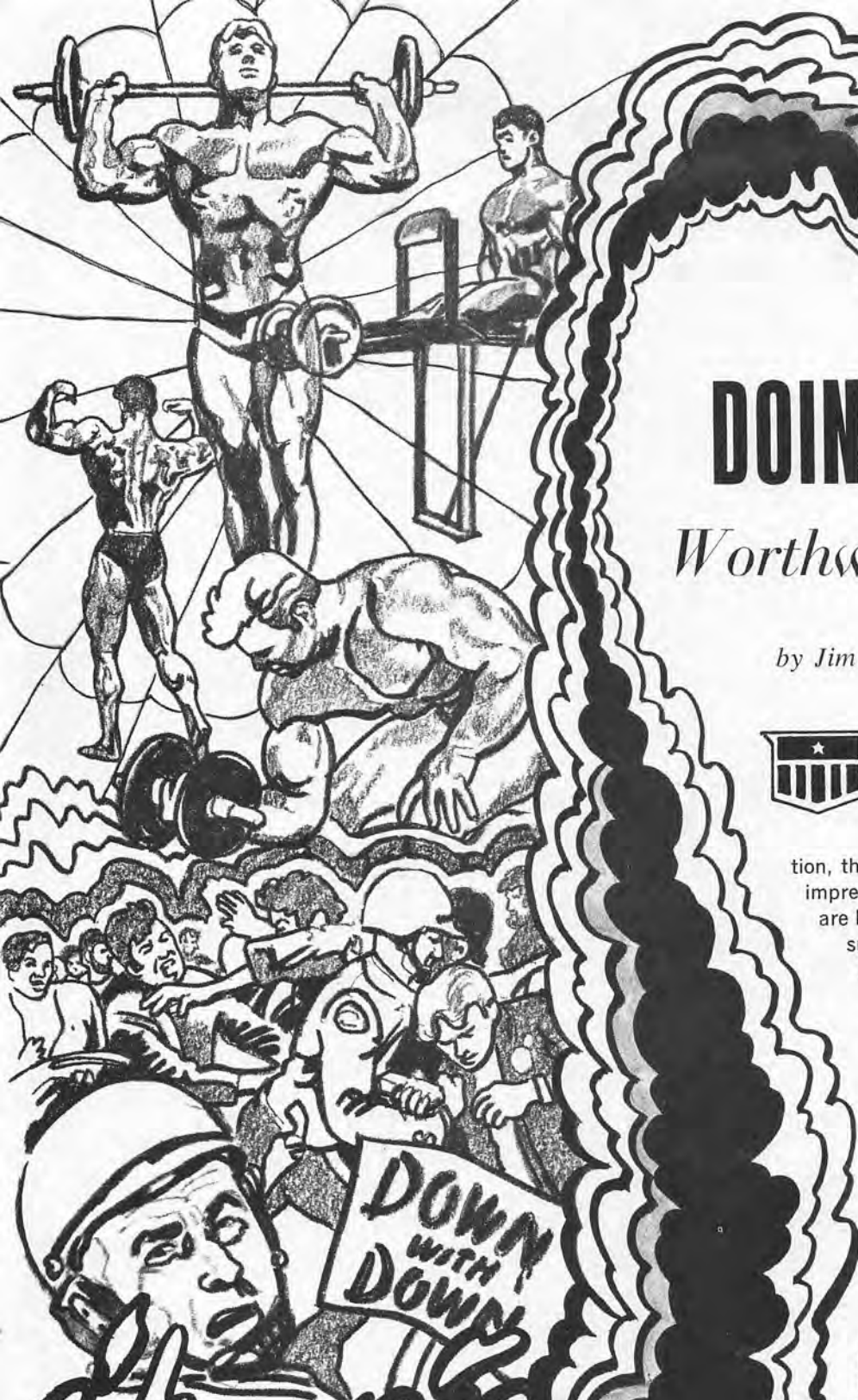
New Jersey residents add 3%, California residents add 5% sales tax



editorial

DOING YOUR OWN *Worthwhile* THING

by Jim Murray

There are a great many harmless hobbies, such as stamp collecting, painting watercolors, and bird-watching. Such activities are relaxing and, for those inclined toward relatively inactive recreation, they're fun. But current news media give the impression that great numbers of young people are becoming interested in more active hobbies, such as traveling and throwing flowers at policemen.

The trouble with the kind of traveling that's done by the flower-throwing hobbyists is that their trips are of the mind, fueled by LSD and other drugs that do both mental and physical damage to their users. Perhaps under the stimulus of some inhaled or injected mind-bending substance, some of the posy putters have progressed to throwing heavier implements at the police—such weighty objects as bottles, bricks, and bags of excrement.

Obviously, these young people need an outlet for their energies. We recommend physical training and sports. Physical training gives you something, taking nothing of value away. Sports provide a much better match-up than a daisy or even a half-brick against a nightstick.

The youngster who (Continued on page 84)

GET THE "WINNING EDGE"

WITH THE CHAMPION HIGH-PROTEIN LIQUID MEAL DRINK.

COMPARE SUPER-PRO "101" With One of the Leading Protein Drinks—as shown in the Analysis Charts Below. Which Gives You More Protein As Well As Vitamins and Minerals?

SUPER PRO "101"

1 glass without milk

NUTRITIONAL ANALYSIS

Protein	45gms*
Carbohydrates	32gms
Fat	3.5gms
Calories	350
Vitamin A	100% MDR
Niacin	100% MDR
Vitamin B1	200% MDR
Vitamin B2	300% MDR
Vitamin B6	**2.5mg
Vitamin B12	**1mcg
Vitamin E	5 I.U.
Vitamin C	500% MDR
Iron	100% MDR
Copper	**(.300mg)
Calcium	90% MDR
Phosphorus	80% MDR

* 63% of the Recommended Daily Adult Dietary Allowance of Protein (70 grams) as established by the National Research Council.
** No Minimum Daily Requirements Established.

Carnation Instant Breakfast

NUTRITIONAL ANALYSIS

Chocolate Flavor

	1 Envelope Instant Breakfast	1 Envelope with 8 fl. oz. Milk*
Protein	8.5 gm	17.5 gm+
Carbohydrate	22.4 gm	34.4 gm
Fat	.3 gm	9.3 gm
†Calories	128	290
Vitamin A	26% MDR	35% MDR
Niacin	25% MDR	27% MDR
Vitamin B-1	20% MDR	30% MDR
Vitamin B-2	11% MDR	48% MDR
Vitamin B-6	**(.267 mg.)	**
Vitamin B-12	**(.17 mcg.)	**
Vitamin C	93% MDR	100% MDR
Vitamin D	0% MDR	25% MDR
Iron	25% MDR	26% MDR
Copper	**(.194 mg.)	**
Calcium	15% MDR	55% MDR
Phosphorus	18% MDR	49% MDR

+25% of the Recommended Daily Adult Dietary Allowance of Protein (70 grams) as established by the National Research Council.
*Values for 8 fl. oz. Milk from Bowes & Church, 10th Edition.
**No Minimum Daily Requirements Established.
†290 calories when mixed with 8 fl. oz. skim milk.

No one can argue the fact that Carnation Instant Breakfast is an excellent nutritional drink for athletes. This was proven in a recent test on runners. The test challenged the "empty stomach" theory so long accepted by coaches and trainers—the rule was 'no food before competition—especially milk.' Then, under controlled conditions—a West Coast University tested Carnation Instant on 10 of its milers. An hour before each of 10 trials, the milers drank Carnation Instant mixed with milk. Result?—**They averaged 2.6 seconds faster time than on an empty stomach!**

Now, if Carnation Instant can yield such fine results with its 17.5 grams of protein **(when mixed with milk)**—imagine what SUPER-PRO "101" can do for you with its **45** grams of complete protein **WITHOUT MILK!** Still another advantage that puts SUPER-PRO "101" ahead of other protein drinks is that **IT NEEDS NO MIXING!**—YOU DRINK IT RIGHT OUT OF THE CAN!

There's no doubt about it—and the analysis charts above prove it—SUPER-PRO "101" has the "Winning Edge" of protein and other vital nutrients your athletic living calls for.

WHY THE BUILT-IN 2-WAY "WINNING EDGE" ACTION OF SUPER-PRO "101" HELPS MAKE YOU A CHAMPION ATHLETE...

Protein is the "built-in" ingredient that gives SUPER-PRO "101" its 2-way "Winning Edge" action because: 1. Protein is a cellular food (feeds all the cells of the body) and 2. It is the major "building block" for muscle tissue. This 2-way action makes protein the most important nutrient for any athlete. And because as an athlete you train hard and compete strenuously, **you need at least 50% more protein than non-athletes.** But where to get the needed extra protein without bloating your self with too much solid food? From SUPER-PRO "101"—the easy-to-digest, delicious liquid protein that packs 45 grams of Class A protein into each 10 oz. can.

COACHES AND ATHLETES can use this valuable "metered nutrition" tool as a training table supplement or quickly assimilable pre-competition meal. Both ways SUPER-PRO "101" ranks as the most effective dietary aid to make today's athletes into tomorrow's stars.

WHY SUPER-PRO "101" IS BEST FOR YOU

1. It's partially pre-digested for faster assimilation into your bloodstream. 2. It gives you loads of protein without added bulk, fat or roughage—which can bloat or overload your stomach. 3. It compresses the protein power of a good, rich steak into one delicious glassful. 4. It's natural-organic (no chemicals or additives)—formulated only from nature's most nutritious foods. 5. It's made by a careful low-heat process to preserve precious enzymes (essential in digesting protein), vitamins and minerals. 6. It's vacuum-sealed to prevent oxidation so that there's no waste or spoilage—you get more protein for your money. 7. Needs no mixing—you can drink it right out of the can, hot or cold.

THE OFFICIAL PROTEIN DRINK OF THE IFBB CHAMPIONS

SUPER-PRO "101" IS THE MODERN "WINNING EDGE" ATHLETIC WAY TO GET YOUR PROTEIN!

ONE GLASS of SUPER-PRO "101" contains the protein power of a complete steak dinner **and** 80 to 120 protein tablets **combined!** Keep a stock of this great protein drink in your refrigerator or pantry—and keep several cans in your locker, too! Make SUPER-PRO "101" a part of your athletic program and daily diet! Watch the difference it makes in your performance—it'll help you get the "Winning Edge" on your competition!

ORDER TODAY—WIN WITH SUPER-PRO "101"

WEIDER SUPER-PRO "101" PLAN
801 Palisade Avenue
Union City, N. J. 07087
Dept. 313-109

(West of the Rockies)
Weider Barbell Co.
1220 Fifth Street
Santa Monica, Calif.

Enclosed is $_____ in full payment for the order of SUPER-PRO "101" checked below. Rush it to me at once.

- ☐ **12-Can Pak of SUPER-PRO "101" (45 complete protein grams per can)..$9.95**
- ☐ **24-Can Pak of SUPER-PRO "101" (45 complete protein grams per can).$17.95**
- ☐ **36-Can Pak of SUPER-PRO "101" (45 complete protein grams per can).$24.50**

Check flavor desired:

☐ **Chocolate** ☐ **Eggnog** ☐ **Vanilla Malt**

NAME.....AGE.....
(please print clearly)
ADDRESS.....
CITY.....STATE.....ZIP.....
(Price is F.O.B. our warehouse)
In Canada: Weider Super-Pro, 2875 Bates Road, Montreal, Que. **Calif. residents add 5% tax.**

sports research center

A Monthly Round-Up of the Latest Sports—Nutrition—Athletic—Physical Fitness Developments

by John P. Jesse

NAMATH'S KNEES CHALLENGE TO SURGEON

When Joe Namath joined the New York Jets football team his arm was worth a fortune but his knees made his future as a pro doubtful. Dr. James A. Nicholas, team physician, told an interviewer from *Medical Tribune* that "Namath came to the Jets from the University of Alabama with a ruptured anterior cruciate ligament and lateral meniscus tear in his right knee. . . . On examination the knee showed typical instability, buckling, swelling, and there was considerable pain." The medial cartilage was removed and the medial ligament repaired surgically, but Namath was hurt again, in an exhibition game, making further surgery necessary. "The second operation was much more serious," Dr. Nicholas told the *Medical Tribune* reporter. "This required the reconstruction of the knee and was decided upon only after consultation with two other orthopedic surgeons. We well knew that it could have meant the end of Nahath's football career." Dr. Nicholas said that when Namath's knee was first operated on, there was no tear of the lateral cartilage, but this was found to be ruptured when the knee was opened for the second operation. Dr. Nicholas also has operated on Namath's left knee, repairing a tear in the patellar ligament.

Flexibility is important to swimmers and divers. Here platform diver Dick Gilbert receives help from a team trainer while limbering up before competition in the Olympic Games. (UPI photo)

HEY, COACH! HOW 'BOUT SOME WATER?

The old practice favored among certain slave-driver type football coaches of prohibiting drinking water on the practice field may cause illness or even death. Noting that deaths among high school football players should be considered "preventible tragedies," Dr. Herman C. Maganzini, team physician for Richard Montgomery High School in Rockville, Maryland, says several measures should be followed. Writing on "Heat Adaptation and Injury in Football Players," *Maryland State Medical Journal*, Vol. 16, No. 10, pp. 45-49, 1967) he recommends the following: "Encourage the athletes to train in the heat prior to the start of regular practice sessions. . . . There must be free access to water before and during practices and games . . . Insist on adequate intake of at least six to twelve (salt) tablets per day and more for the heavy weight losers . . . Check (weight loss) for each session with special attention to the losers of ten pounds or more . . ." Dr. Maganzini also suggests that no stimulants or rubber suits should be allowed and that coaches should learn the symptoms of heat illness, especially being aware that loss of alertness and accuracy are among them.

Young men interested in physical training careers may find physical therapy a rewarding career. The value of preventive and corrective exercise is increasingly recognized for such diseases as rheumatoid arthritis. Writing on "Approaches to Deformities in Rheumatoid Arthritis" in *Postgraduate Medicine* (January, 1969, pp. 136-143), Dr. Robert L. Swezey had the following to say: "Exercise designed to increase range of motion or strength should be performed each day at a time when the patient is feeling at his best . . ." Dr. Swezey points out, however, that "Teaching a patient an exer- (Continued on page 87)

Look what the swingers on Muscle Beach take to watch their weight—to Shape Up—Muscle Up—to Energize their bodies with power and virility...

THE PO

FORMULATED FOR

Vitamins, minerals and proteins in tablet or capsule form are important to your health and in helping to build your strength. Fine. But if you really want to come on like a tiger... if you're looking for extra power... if you want to gain weight or lose it... if you want to surge with stamina, vigor and vitality you need to have a highly concentrated drink, supercharged with proteins, vitamins and minerals as well as balanced amounts of carbohydrates. That's what the Powerizers are all about!

Here are famous Weider Wildcat portions that give you a nutritionally-balanced "Meal-In-A-Can". Drink 'em right out of the can, hot or cold. Mix them with juices or milk... no matter how you take them, they're loaded with the power you're looking for. So, DRINK THE POWERIZERS! They're 100% natural-organic (no chemicals or additives) and specially formulated for the go-go guy who's out to make it big!

100% New! CRASH-WEIGHT Formula #7 (Liquid) Helps "Beef You Up"

Make your weight-gains "come alive". Use it to help sock your body with gains of **up to 14 pounds in 14 days!** That's right! In just two weeks' time you can have a body you can be proud of for the rest of your life. Make spectacular weight gains the Space Age way with famous CRASH-WEIGHT Formula #7—now better than ever in delicious liquid form. Supplies over 600 weight-gaining/body-building calories in a glass. It's the same formula the champs use to make their gains "come alive". Comes in chocolate and vanilla flavors.

Ingredients: One 10-oz. can supplies 25 grams protein, 40 grams carbohydrate, 38 grams fat, 600 calories, and the following vitamins and minerals — Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_6, Vit.B_{12}, Vit. C, Vit.E, Niacinamide, Calcium Pentothenate, Iron, Iodine, Calcium, Phosphorous, and Copper. Made from water, milk sugar, sugar, corn oil, milk protein, non-fat milk solids, salt, carrageenan, vanilla, cocoa (when indicated). 100% Natural-Organic.

12 CANS $9.95

SUPER-PRO "101" (Liquid) for "Muscle Hustle"

Here's the "mod" way to "powerize" your muscles with protein for more "sure-fire" muscle growth. One 10-oz. can of "101" gives you a whopping 40 grams of complete protein—the equivalent potency of a steak dinner and 70 protein tablets. No more overloading your stomach with bulky protein foods! "101" is easily digested and assimilated for fast muscle tissue-building/repairing action. Rugged good taste in 3 great flavors: chocolate, vanilla and eggnog.

Ingredients: One 10-oz. can supplies 40 grams protein, 40 grams carbohydrate, trace of fat, 300 calories, and the following vitamins and minerals — Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_6, Vit.B_{12}, Vit.C, Vit.E, Niacinamide, Calcium Pentothenate, Iron, Iodine, Calcium, Phosphorous, and Copper. Made from water, milk sugar, milk protein, soya protein, corn oil, malt, salt, vanilla, cocoa (when indicated). 100% Natural-Organic.

12 CANS $9.95

WEIGHT-LOSS RX7 (Liquid) "Melts" Fat — Helps Build Muscular Shape

Do you want to lose 3 to 14 pounds fast? Do you want to create a new, slimmer and muscular you as you lose fat? Do you want to lose weight and build a handsome body at the same time? Want all these benefits in rocket-speed time? — Then let the WEIGHT-LOSS RX7 Plan help you knock off muscle-hiding tissue in the next 14 days. This proven Slimmer's "Meal-In-A-Can" comes with an excitingly new reducing and shape-up course—to help you emerge within the next 14 days as a charged-up "tiger" — ready for action. Comes in two delicious milkshake flavors: vanilla and chocolate.

Ingredients: One 10-oz. can supplies 25 grams protein, 25 grams carbohydrate, less than 1 gram fat, 225 calories, and the following vitamins and minerals—Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_{12}, Vit.C, Vit.E, Niacin, Calcium, Iron, and Iodine. Made from water, natural milk proteins, natural soya protein, natural sugar, corn oil, and natural flavors. 100% Natural-Organic.

12 CANS $9.95

WERIZERS!

POWER—VIGOR—MUSCLES

MUSCLE DENSITY Formula RX7 (Liquid)—Cuts Pounds Not Power" — Not Size!

When you seem to be losing "muscle density" (muscle shape and hardness) because you've added a little too much weight, let the RX7 Plan help "melt" it off. All you do is substitute 1 can for one of your daily meals to help speed you to greater than ever definition; RX7 is loaded with vitamins, minerals and protein for nutritional "insurance". Comes with course. Delicious in chocolate or vanilla flavors.

Ingredients: One 10-oz. can supplies 25 grams protein, 25 grams carbohydrate, less than 1 gram fat, 225 calories, and the following vitamins and minerals — Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_{12}, Vit.C, Vit.E, Niacin, Calcium, Iron, and Iodine. Made from water, natural milk proteins, natural soya protein, natural sugar, corn oil, and natural flavors. 100% Natural-Organic.

12 CANS **$9.95**

100% New! INSTANT WEIGHT-GAIN BREAKFAST (Liquid) Helps You Gain Weight Boosts Your Energy

Start your weight-gaining day with a blast of 497½ weight-producing calories. WEIGHT-GAIN INSTANT BREAKFAST not only adds calories but also carbohydrates, proteins, vitamins and minerals to help build up your blood sugar level early in the morning for an all-day energy and weight-gaining boost. Add honey, bananas, eggs, ice cream to it for still more pound-adding calories. WEIGHT-GAIN INSTANT BREAKFAST is nutritionally-balanced for faster assimilation and it works well with CRASH-WEIGHT Formula #7, for even faster, greater weight gains. The only WEIGHT-GAIN INSTANT BREAKFAST made for athletes and muscle champions. Comes with course. 3 lip-smacking flavors: chocolate, vanilla and coffee.

Ingredients: One 10-oz. can supplies 35 grams protein, 50 grams carbohydrate, 17.5 grams fat, 497½ calories, and the following vitamins and minerals — Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_6, Vit.B_{12}, Vit.C, Vit.E, Niacinamide, Calcium Pentothenate, Iron, Iodine, Calcium, Phosphorous, and Copper. Made from water, milk sugar, sugar, milk protein, non-fat milk solids, soya protein, corn oil, salt, vanilla, cocoa (when indicated). 100% Natural-Organic.

12 CANS **$9.95**

INSTANT NATURE BREAKFAST (Liquid) The All-Day Energy-Booster

Taken with your regular breakfast, it provides a surging all-day energy blast. Builds blood sugar in your system at the start of the day and assures proper nourishment for athletes through its high-protein, carbohydrate, vitamin-mineral formulation. One can equals the Vitamin C power of 6 oz. of orange juice . . . the calcium power of an 8-oz. glass of milk . . . the protein power of 3 eggs . . . the vitamin-mineral power of 3 bacon strips . . . and the energy power of 3 slices of buttered toast. **It will not add weight.** Comes with course. Great-tasting in chocolate, vanilla and coffee.

12 CANS **$9.95**

INSTA-POWER (Liquid) For Instant Energy

You can't bomb/blitz your way to champion-sized muscle gains without a big blast of energy fuel before every workout. INSTA-POWER, the high-carbohydrate drink delivers fast energy in delicious, concentrated liquid form — along with added amounts of vitamins and minerals to help prevent musclebuilding deficiencies. It's the "Muscle Up", "Blast-Off" energy fuel used by champion athletes, power lifters and muscle champs. Taste-tempting in chocolate, vanilla and eggnog.

Ingredients: One 10-oz. can supplies 15 grams protein, 85 grams carbohydrate, trace of fat, 400 calories, and the following vitamins and minerals — Vit.A, Vit.D, Vit.B_1, Vit.B_2, Vit.B_6, Vit.B_{12}, Vit.C, Vit.E, Niacinamide, Iron, Calcium, and Phosphorous. Made from water, milk sugar, milk protein, soya protein, non-fat milk solids, corn oil, salt, carrageenan, vanilla, cocoa (when indicated). 100% Natural-Organic.

12 CANS **$9.95**

Mail this coupon for pronto service—or take to your local health food store:

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(West of the Rockies)
Weider Barbell Co.
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Santa Monica, Calif. 90401

WEIDER'S WILDCATS

Please send me the Powerizers checked below for which I enclose $_____.

- ☐ CRASH-WEIGHT FORMULA #7 (Liquid) **12-CANS—$9.95**
- ☐ SUPER-PRO "101" (Liquid)_____ **12-CANS—$9.95**
- ☐ MUSCLE DENSITY RX7 (Liquid)_____ **12-CANS—$9.95**
- ☐ INSTA-POWER (Liquid)_____ **12-CANS—$9.95**
- ☐ WEIGHT-LOSS RX7 Plan (Liquid)_____ **12-CANS—$9.95**
- ☐ WEIGHT-GAIN INSTANT BREAKFAST (Liquid)_____ **12-CANS—$9.95**
- ☐ INSTANT NATURE BREAKFAST (Liquid)_____ **12-CANS—$9.95**

Check flavor: ☐ Chocolate ☐ Vanilla Malt ☐ Eggnog ☐ Coffee

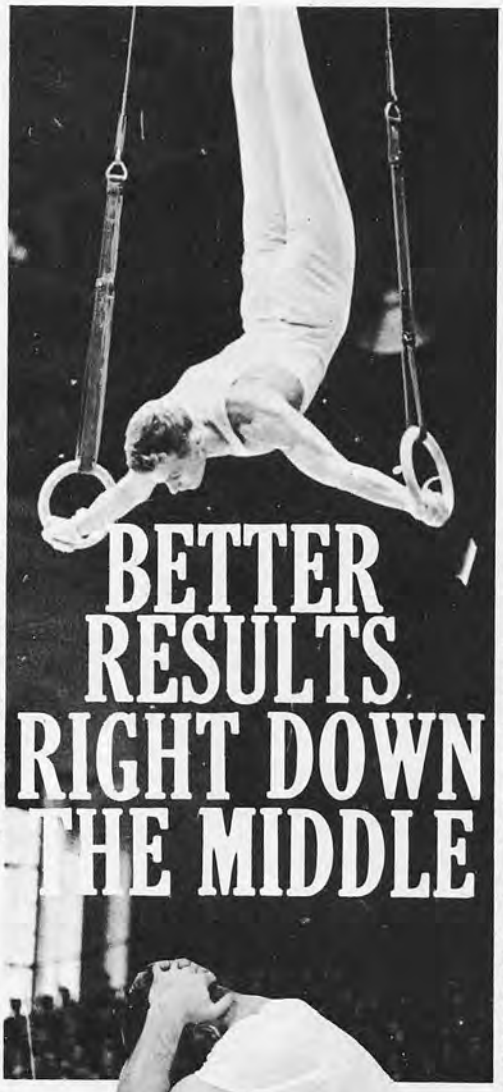
Calif. residents add 5% tax; Sent Freight Collect

NAME _____ (Please print clearly)

ADDRESS _____

CITY _____ STATE _____ ZIP _____

AVAILABLE AT HEALTH STORES LISTED IN THE BACK PAGES OF THIS MAGAZINE



BETTER RESULTS RIGHT DOWN THE MIDDLE

A strong, muscular mid-section is important to topflight performance in every sport, which is why record-breakers in all sports exercise on an abdominal board. Take a tip from the super athletes who develop and maintain superior abdominal muscle fitness with workouts on a Weider Adjustable Abdominal Board. No other method strengthens abdominal musculature more effectively or maintains mid-section fitness more efficiently.

A regular routine of simple abdominal muscle exercises takes only minutes, producing maximal results when practiced on an incline. The slant of the board makes the muscles work harder, over a complete range of motion, reaching the entire mid-section, from top to bottom. Results obtained lying flat are only a poor imitation of what you get from workouts on a Weider Adjustable Abdominal Board.

The completely adjustable Weider Abdominal Board is ideal for home or school, has a sturdy steel tube frame, an oak board with foam rubber padding, and a washable plastic cover. Its rubber-tipped legs won't mar floors. The apparatus is 66 inches long, 16 inches wide, weighs only 28 pounds.

FREE

128-page illustrated instruction booklet explains how to develop the kind of trim, strong mid-section that will benefit any athlete or fitness seeker.

$31.98

Twisting sit-ups strengthen mid-section and sides.

Alternate straight-leg kicks trim waistline, aid fitness.

FOR MUSCULAR WAIST—USE THIS COUPON

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Dept. 343-109

(West of the Rockies)
WEIDER BARBELL CO.
Muscle Beach
1220 Fifth Street
Santa Monica, Calif. 90401

Enclosed is **$31.98** in full payment, for which send me one Weider Adjustable Abdominal Board and course.

Name .....

Address .....

City..... State..... Zip.....

(Please print clearly)

(Price is F.O.B. our warehouse.)
New Jersey residents add 3%, California residents add 5% sales tax to total of order.

the training table

by John P. Jesse. *An experienced athlete and coach for more than 30 years, John Jesse is a member of the American College of Sports Medicine, the Phi Epsilon Kappa physical education fraternity, the U.S. Federation of Track Coaches, and the Fitness and Training Section of the Ergonomics Research Society. He lettered at the University of Southern California in football and handball.*

Al Oerter of West Islip, N. Y., is the first man in sports history to win a gold medal in four straight Olympic Games. Oerter won his specialty, the discus throw, in 1956, 1960, 1964, and 1968 —spinning the platter a towering 212′ 6½″ to win at Mexico City. (UPI photo)

Question: Whenever I'm working out with the weights, my mouth gets very dry and parched. I always thought this was perfectly natural and happened to everybody, but now I'm told that it never happens to my friends. Do you suppose there is anything serious involved in this?

Answer: You certainly ought to have a medical check-up. A special study of dry mouth was made at the Department of Oral Medicine of the University of Alabama Medical Center. It was found that this condition is often a symptom of abnormalities of the blood sugar level. It could, for example, indicate that the person with the dry mouth is a pre-diabetic. This would mean that there is a weakness in the mechanism by which your system removes a surplus of sugar from the bloodstream. Such a weakness permits too much sugar to accumulate, which is an extremely dangerous condition. It can lead to a number of crucial medical conditions from gangrene to heart trouble.

Dryness of the mouth can also indicate too low a level of sugar in the blood, which can cause mental depression, sudden spells of weakness, and blackouts.

Of course, neither problem is necessarily present just because your mouth gets dry. But the dryness is an indication that you ought to have a thorough check-up. If your blood sugar level tends to be either too high or too low, it can be improved by a change in your diet. Both conditions are caused by eating too much sugar, and usually can be relieved by eliminating sugar from your diet. You don't actually require sugar for energy. You get a steadier supply of energy by eating a high protein diet—plenty of meat and eggs and a concentrated protein supplement any time you feel your energy is getting low and you need to renew it quickly.

If your doctor should find you're actually diabetic, he would probably also want you to take a hormonal drug to get the condition under control. If you notice no other symptoms, however, that is unlikely.

Question: I know that vitamin A is good for night vision, but will it do anything to help a man who is nearsighted? I can't stand contact lenses, and eyeglasses of course are always in the way when I am playing ball or even during a workout in the gym. Maybe you can suggest something.

Answer: Once you (Continued on page 62)

The Gerry Philbin Story

"TOO SMALL" COLLEGE LINEMAN MUSCLES UP TO ALL-PRO HONORS

by Jay Van Zandt

Broadway Joe Namath gets most of the sportswriters' attention when the New York football Jets are in action, but sports fans from coast to coast watching the unbelievable upset of the NFL's Baltimore Colts saw that the Jets have something else going for them too: a defense that makes it tough for the opposition to score.

One of the leaders of that defense is Gerry Philbin, all-pro defensive left end, who put so much pressure on Colt quarterback Earl Morrall during the Super Bowl moment of truth that the amazing Baltimore retread had his worst afternoon of the season.

The surprizing thing about Philbin is that he is so "small" a man to be effective as a defensive end. Ordinarily a 6′ 2″, 250-pounder wouldn't be considered small, but defensive end in professional football is populated by such treetop-tall giants that a man 6′ 4″ is only average height for the position. As the Street and Smith *Pro Football Yearbook* put it, however, Philbin "can be considered first rate. What he lacks in size for his position he makes up in leadership, pursuit, hustle, and hard hitting."

Philbin has been plagued by lack of size throughout his football career, playing as a college lineman while weighing only 190 pounds. One-ninety is small but occasionally adequate in college; however, it is unthinkably undersized for a pro lineman. It's about the size of the professional game's "diminutive" speedsters, the flankers

and defensive backs.

Until the summer vacation between his junior and senior years at the University of Buffalo, Gerry Philbin was a talented, but too-light football player. He had big ambitions, though, wanting to go all the way and earn a spot with a professional team, so he listened carefully to some words of advice from Bill Mazer, then a broadcaster for Buffalo football games. Mazer, now an NBC announcer, laid it on the line: "You'll have to gain weight to get into the pros, Gerry, and weight training is the only way to do it.'

Taking Mazer's advice to heart, Gerry made his way to the Buffalo health club of Ken Stoller who got him started on a barbell and diet program. "I really have to give Ken full credit for getting me started in the right direction," says Philbin. "The results he got from me were amazing."

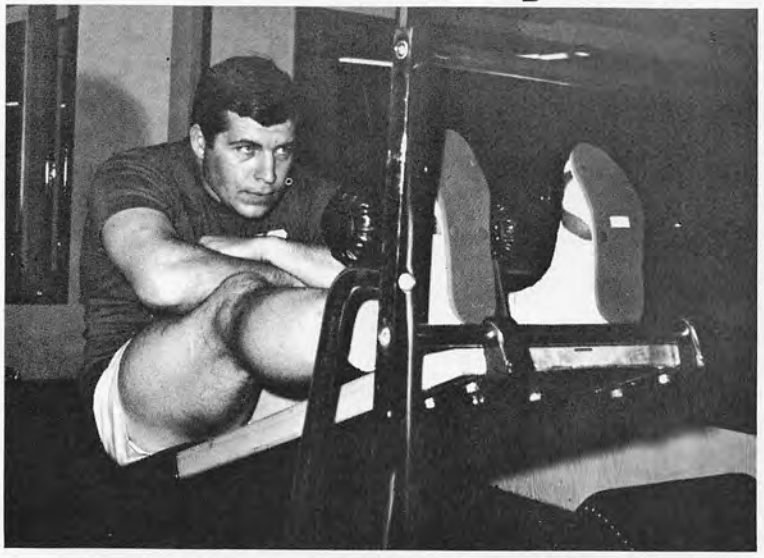
They were amazing to Gerry, but quite similar to those achieved by many other football players "too small" for the pros but blessed with all the requisites except size. Philbin gained 35 pounds in less than four months and the gain in weight was solid muscle as attested to by the fact that he could Clean and Press a 270-pound barbell after one year of serious training.

By the time he reported to the Jets training camp for the first time, Gerry Philbin had beefed up to 245 pounds and had the muscle to match his athletic ability. He's been a vital cog in the Jets football machine ever since. Weight training salvaged a career for Gerry and helped provide the Jets with a driving, thrashing, never-say-die dervish of a defensive end who's after the opposition's backs from the time the ball is snapped until the whistle blows.

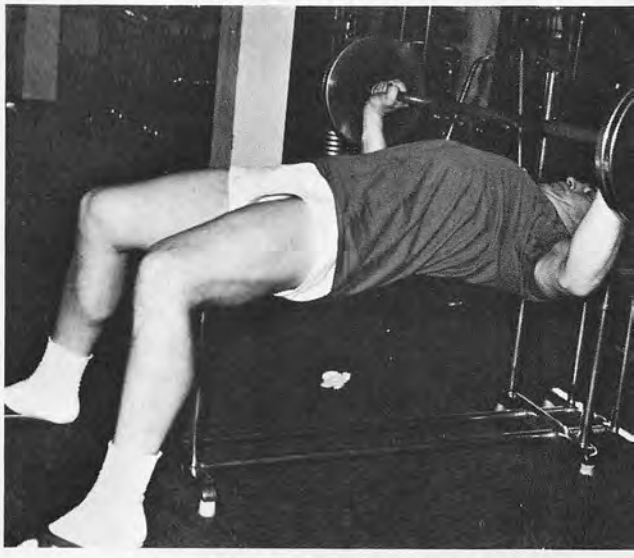
All Pro defensive end Gerry Philbin makes up for lack of gigantic size by determination, skill, and raw power.

Frequent training partners at the Shelton Health Club, Lexington, AAA Publisher Joe Weider (left) and Gerry Philbin shake hands as Joe congratulates Gerry on being named to the All-Pro team.

Gerry's Off Season Typical Workout

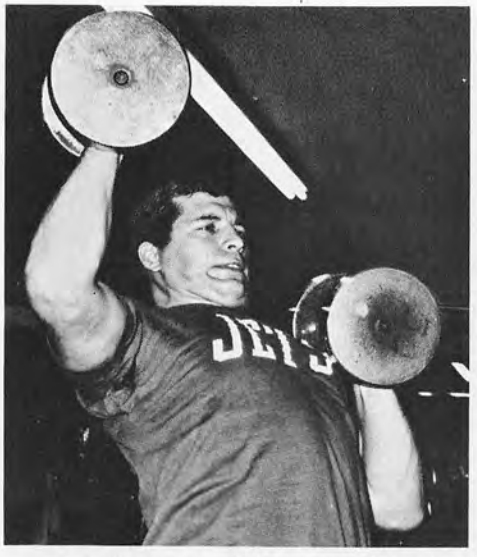


Situps keep Philbin's mid-section in shape.



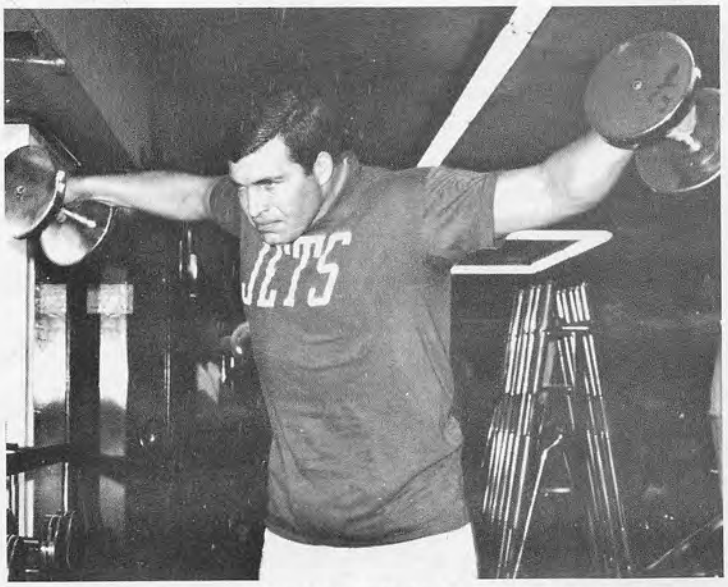
Philbin uses the Supine Press for upper body power.

Having completed five years with the Jets, Philbin has seen the club develop from mediocrity to a potent force capable of meeting any team in professional football on equal terms. During that time, Gerry has stuck faithfully with the off-season weight training, crediting it with helping him recover quickly from a severe shoulder separation that threatened his career when he was just making his start with the Jets. The shoulder power he had developed, the kind of deltoid muscle it takes to Press 270 pounds overhead and more than 300 while lying supine, helped protect him from more serious injury and enabled him to bounce (Continued on page 65)

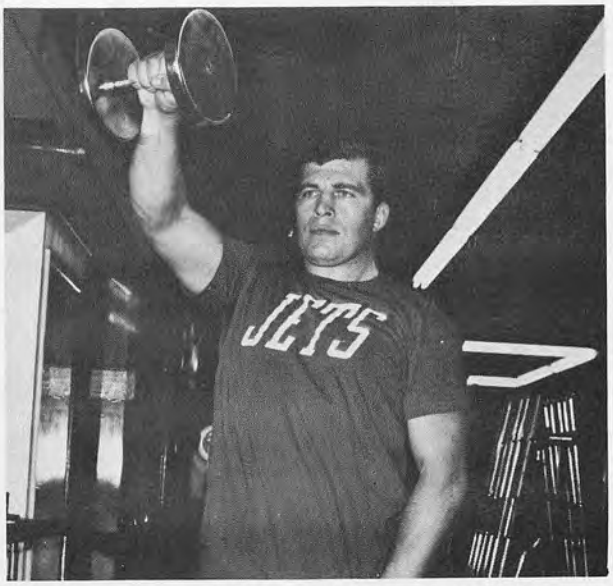


Fast Alternate Dumbbell Presses build Philbin's shoulders.

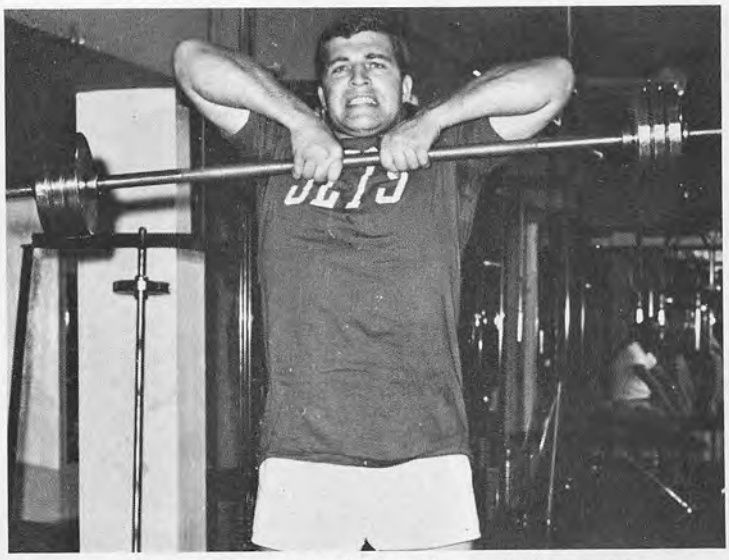
Alternate Dumbbell Curls keep biceps toned.



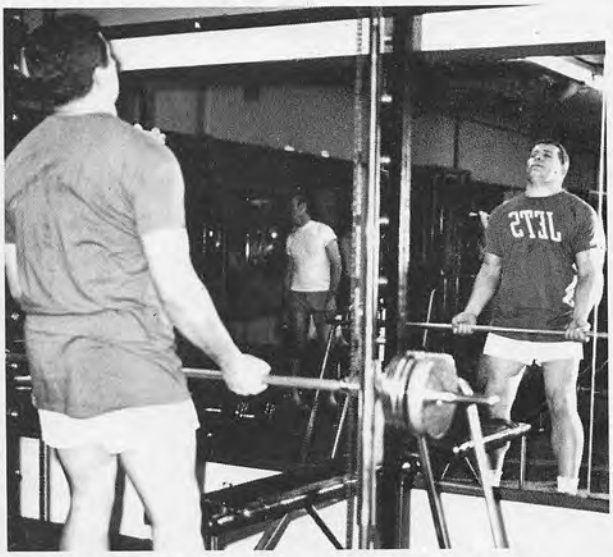
Lateral Raises are unexcelled for building all-around shoulder muscle.



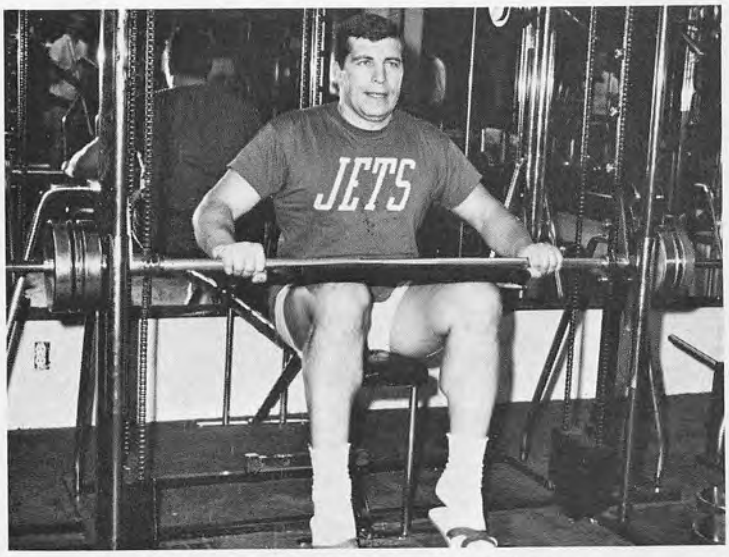
Alternate Forward Raises put shock-absorbing muscle on the front of the shoulders.



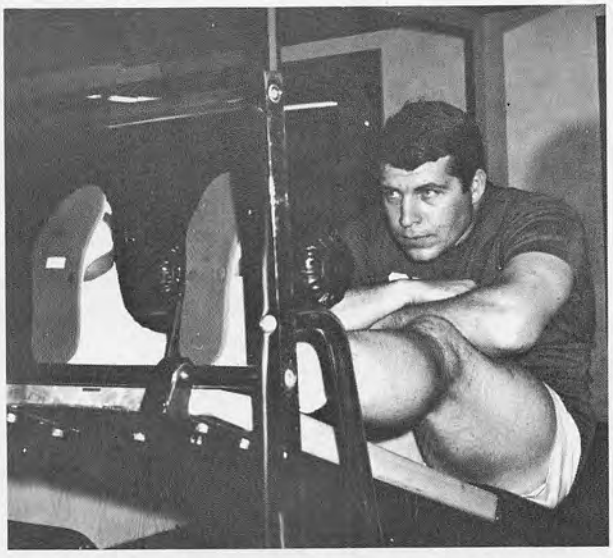
Upright Rowing puts the finishing touches on shoulder muscles.



Heavy Barbell Curls help build arm power for tackling.



Rise-on-toes builds springy calf muscles for football power.



Philbin finishes his workout as he starts it—with Situps.

New "SHAPE-UP" KIT

A Gift of Fitness For You

Here's an invitation to a fellow who wants to be a "bold" virile guy . . . a fellow who isn't satisfied to chug along through life feeling pooped out—left out of all the fun—and out of shape. It's for the guy who knows what he's missing—who wants to finish what he starts—who wants to charge up his body with vitality, magnetism and muscle power for vital living—from dawn to dusk.

Are you that fellow?—Then at last, here's your invitation to try a brand new "SHAPE-UP" Kit that helps you charge up your body and actually feeds your muscles while you "Muscle Up." It contains these three "Wildcat" supplements that feed your nutritionally-starved muscles: *1. "Swinger's" SUPER-PROTEIN Tablets. 2. VITAMIN-MINERAL "100" Tablets. 3. TRIPLE E ENERTOL Wheat Germ Oil Capsules.* Plus—a FREE colorfully-illustrated course of exercises, diets, nutritional tips, information on gaining or losing weight and building fitness. It could be enough to turn you into a "swinging" guy—giving you that "savage" look the girls keep their eyes on!—and at a *Gift Price!* You get a *$12.98* Nutritional Pak for only *$9.48* with a FREE copyrighted course not available anywhere else. So, come on!—treat yourself to a gift of fitness. It could be enough to turn you into a real "swinging" guy!

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Enclosed is: ☐ Check ☐ Money Order for $_____

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(please print clearly)

ADDRESS_____

CITY_____ STATE_____ ZIP_____

EXPLOSIVE MUSCULAR POWER FOR DECATHLON PERFORMERS

The decathlon has been called the supreme test of athletic ability. Its individual events consist of four runs, three jumps, and three throws, seven of the ten being classed as technique events.

What are the physical and psychological qualifications required by an athlete to participate successfully in this all-around test? Mitchell[1] comments that above all he must have basic speed, then develop a high level of strength (explosive power) and muscular endurance to which is added "grim determination and deep concentration." Smith[2] states, "Besides possessing some of the explosive power of a sprinter or shotputter, he must have the spring of a high-jumper, the strength of a pole-vaulter, the ability to acquire skills, and a great store of endurance." He adds that the best decathlon performers are invari-

Bill Toomey, Olympic decathlon champion, is the product of diversified power, skill, and endurance training—needed to develop the qualities it takes to throw the javelin more than 200 feet, high jump over six feet, and run 400 meters in 45.6 seconds.

by John P. Jesse *An experienced athlete and coach for more than 30 years, John Jesse is a member of the American College of Sports Medicine, the Phi Epsilon Kappa physical education fraternity, the U.S. Federation of Track Coaches, and the Fitness and Training Section of the Ergonomics Research Society. He lettered at the University of Southern California in football and handball.*

SCHEDULE ONE

INCLINE BENCH PRESS.

LATERAL RAISE, LEANING.

ONE-THIRD SQUAT.

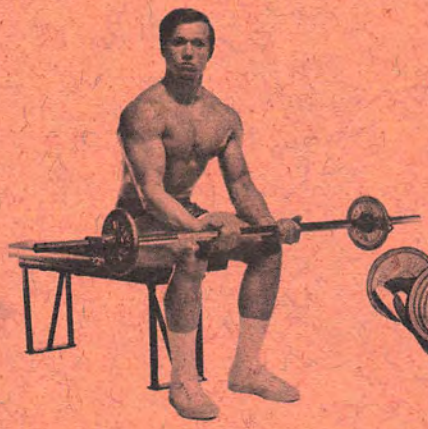
BENT-ARM PULLOVER.

TWISTING SITUP.

TWIST, BENDING FORWARD.

RISE ON TOES.

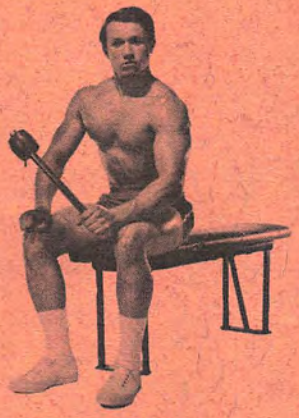
LEG RAISE, HANGING.



WRIST CURLS.

LEG EXTENSIONS.

SHOULDER PUSH (ARMS STRAIGHT).

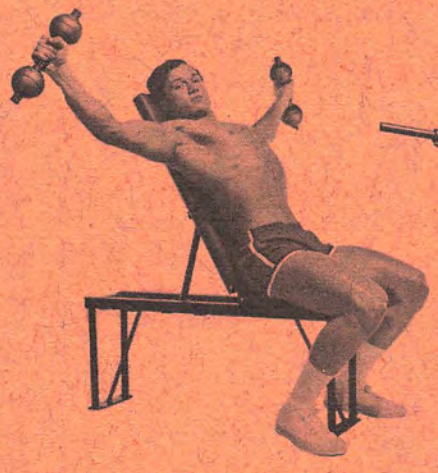


WRIST ROTATION.

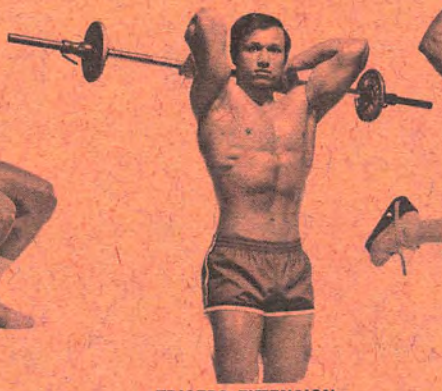
ably "evens" sprinters and strong in the throws.

Mitchell[1] writing about the decathlete chooses a hurdler as a potential decathlon specialist stating, "I am sure many good hurdlers with their basic speed, strength and obvious ability to master difficult techniques are excellent material . . ." In this connection Ducky Drake, the U.C.L.A. track coach, in 1956 pointed out the best U.S. decathlon performers were all hurdlers—Simons, Albans, Mathias,

SCHEDULE TWO

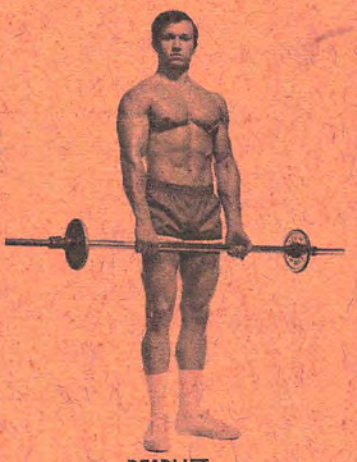


INCLINED LATERAL RAISE.

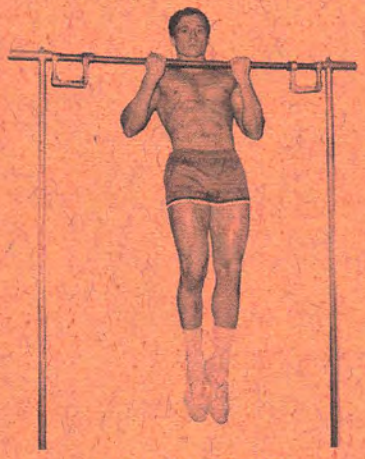


TRICEPS EXTENSION.

LEG CURLS.



DEADLIFT.

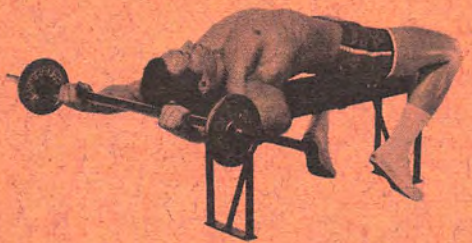


ROPE OR POLE CHIN.

KNEE RAISE.

FORWARD AND LATERAL RAISES.

STRAIGHT LEG RAISE.



FOREARM PULL.

BOUNCING SPLIT SQUAT.

WRIST EXTENSIONS.

SIDE LEG RAISE.

Johnson, and Campbell, the last named three winning the Olympic gold medal in this event.[8]

Little has been written on the subject of training for the decathlon by coaches and athletic authorities in the English speaking world. The very few articles written define and tell the athlete what physical and psychological traits are required for successful participation in this event. A few articles have been written by decathletes

themselves, in which they discuss their overall training program, their weaknesses in specific events and the problems encountered in attempting to master the various complicated skills. A lack of knowledge as to how they should *best* train for specific physical qualities (strength and stamina) as related to the over-all training program, where so much of the training regimen must be devoted to the refinement of a wide range of skills, has been of concern to decathletes throughout the world. The lone exception would be the German athlete where tremendous emphasis has been placed on development of decathlon performers since 1960, by coaches and athletic authorities.

Storoshenko[4] the outstanding Soviet decathlete highlights this problem as late as 1967 in his discussion about his decathlon training. He writes, "Despite our successes in the decathlon last season and the considerable depth (18 athletes bettered 7300 points), a full development of this interesting and complicated event in the U.S.S.R. is not possible. I think that the first reason is in the lack of sufficient specialist coaches. I believe it is necessary to develop the decathlon through the assistance of the experienced German coaches to exchange information as well as short practical meetings of coaches and athletes of both countries. This would allow for evaluation of training methods and the techniques of individual events."

Kurt Bendlin, West German super athlete, holds the world record for the decathlon with 8,319 points. He placed third at the Olympics behind Toomey of the USA and Walde of West Germany despite a javelin throw of 247′ 5¼″.

This article will provide some of the answers to the problems facing the decathlete in his attempt to develop an optimum level of strength and explosive power in all of the muscles involved in the ten events and at the same time retain enough energy to develop the quality of stamina and master the complicated skills of the decathlon.

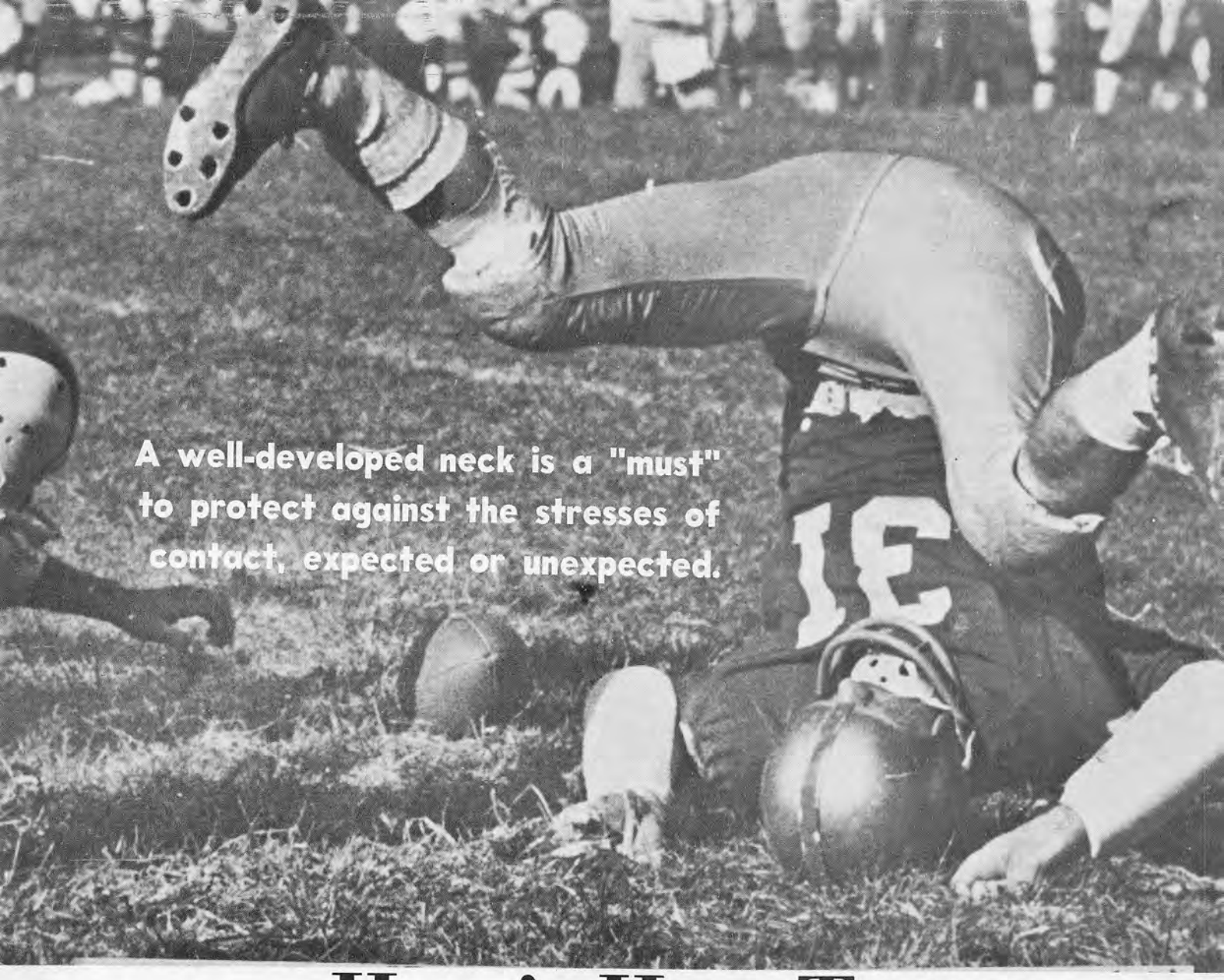
There has been a steady increase in the total points scored by decathlon performers over the years. What are the reasons for this increase? Improved training methods (weight and interval), better designed equipment, improved running, jumping, and throwing surfaces and a greater number of athletes participating in the decathlon have all been credited with the improvement in points scored. What part, if any, has weight training since its adoption in the mid-fifties played in these increases?

An analysis of world record performances in the decathlon from 1922 to the present time, including the 1952-1960 and 1968 Olympic winners performances, may provide us with some of the answers.

In the 100-meter dash, times have consistently been below 11 seconds since 1932; in the broad jump, distances have averaged above 23 ft. since 1932; distances in the shot put since 1930 have averaged between 45 ft. and 50 ft. with only four athletes exceeding 50 ft.; high jump figures since 1922 have averaged between 5 ft. 11 inches and 6 ft. 3 inches with the exception of Mexico City where several athletes cleared heights between 6 ft. 4 inches and 6 ft. 7 inches; in the 440-meter run times have been consistently below 50 seconds since 1932; in the discus throw there was a fairly large increase (average 146 ft.) in the distance thrown beginning in 1932 and continuing until 1952. From then on distances thrown have been above 150 ft. In the pole vault since 1955 heights cleared have averaged 13 to 15 ft. in contrast to the below 13 ft. level prior to 1955; in the javelin throw, with one exception, a tremendous increase in distances thrown is reflected subsequent to 1958 (from 196′ to 213′ up to 229′); in the 1500-meter run, with two exceptions, times have averaged between 4 minutes 40 seconds and 5 minutes 10 seconds.

From the figures above we can say that strength development in the vertical plane with emphasis on exercises such as Squats, Deadlifts, Bench Presses, Cleans, and Curls have contributed in some degree toward improvement in scores for the 100-meters, 110-meter hurdles,

(Continued on page 51)



Here's How To Strengthen Your Neck for Athletic Fitness

by Clarence Ross, "Mr America" Winner

Not only does a strong, muscular neck epitomize manliness but it also is an important asset to an athlete—especially if he is active in one or more contact sports. Wrestlers, in particular, need strong, tough neck muscles to resist their opponents' efforts to sink the half-nelson and to bridge their shoulders clear of the mat when they're in danger of being pinned.

For the football player, a strong neck can actually be a life-saver and well-developed neck muscles are indispensable for the heads-up style of blocking and tackling advocated by most coaches. Neck strength is important in other sports as well, however, where the contact that occurs is not deliberate but results from unavoidable falls. High jumpers and pole vaulters, for example, of necessity must "fall" many times a day in practice and competition. If they land with a head and shoulder roll after any jump, strong muscles can help prevent injury.

Gymnasts and tumblers, especially when they do trampoline work, need protective neck muscle. America lost one of its best pole vaulters, Brian Sternberg, to a neck injury suffered while training on a trampoline. A well-

Strengthen Your Neck

developed neck is a must to protect against the stresses that occur during awkward falls or sudden, unexpected contact.

The growing popularity of judo and karate indicates another group of athletes who need routine practice of neck-strengthening exercises. Even divers need strong necks to withstand the impact of hitting the water, though swimming is not considered a contact sport.

Since a strong neck is needed for successful performance and protection in so many sports, it is fortunate that the neck muscles respond readily to exercise. Two exercises, in particular, can be recommended to develop the strength and protective muscle that are needed: one is the well-known wrestler's bridge and the other is the practice of neck flexion while wearing a head strap with weight attached.

The best-known and most effective way to practice bridging is as follows: Lie supine on a mat or with some kind of padding under your head and draw your feet up as close to your buttocks as you can. Fold your arms across your chest and press down into the padding with your head as you arch your body upward, so only your feet and head are supporting you. Arch up as high as possible, so that the top of your head and then your forehead are against the mat or pad. This is the high bridge position. After reaching the high bridge, roll back down and touch your back to the mat or floor and repeat for 10 repetitions.

When 10 repetitions of full high bridging becomes easy, you can continue to progress by holding a weight—a 10-pound barbell plate—on your chest. Whenever 10 repetitions with a given weight become easy, use a heavier weight. Great neck strength and toughness can be developed by bridging with from 25 to 50 pounds, but this by no means represents anywhere near the strength limit of a strong athlete's neck. George Hackenself with elbows on thighs. Keeping your body inclined for-311-pound barbell while in the high bridge position. Sonny Liston, former heavyweight boxing champion, used to perform bridging type movements, rolling his head backward and forward and from side to side while in the vertical headstand position, taking the full 215 pounds of his own weight on his neck muscles.

A more progressive way to perform neck exercises, and one that can be started with much less strain than bridging, is to work with increasingly heavy weights on a Weider headstrap. The headstrap allows you to start with as little as 2½ pounds resistance and makes it unnecessary to undergo the discomfort of presing your head against a mat or pad before you have had some initial neck training.

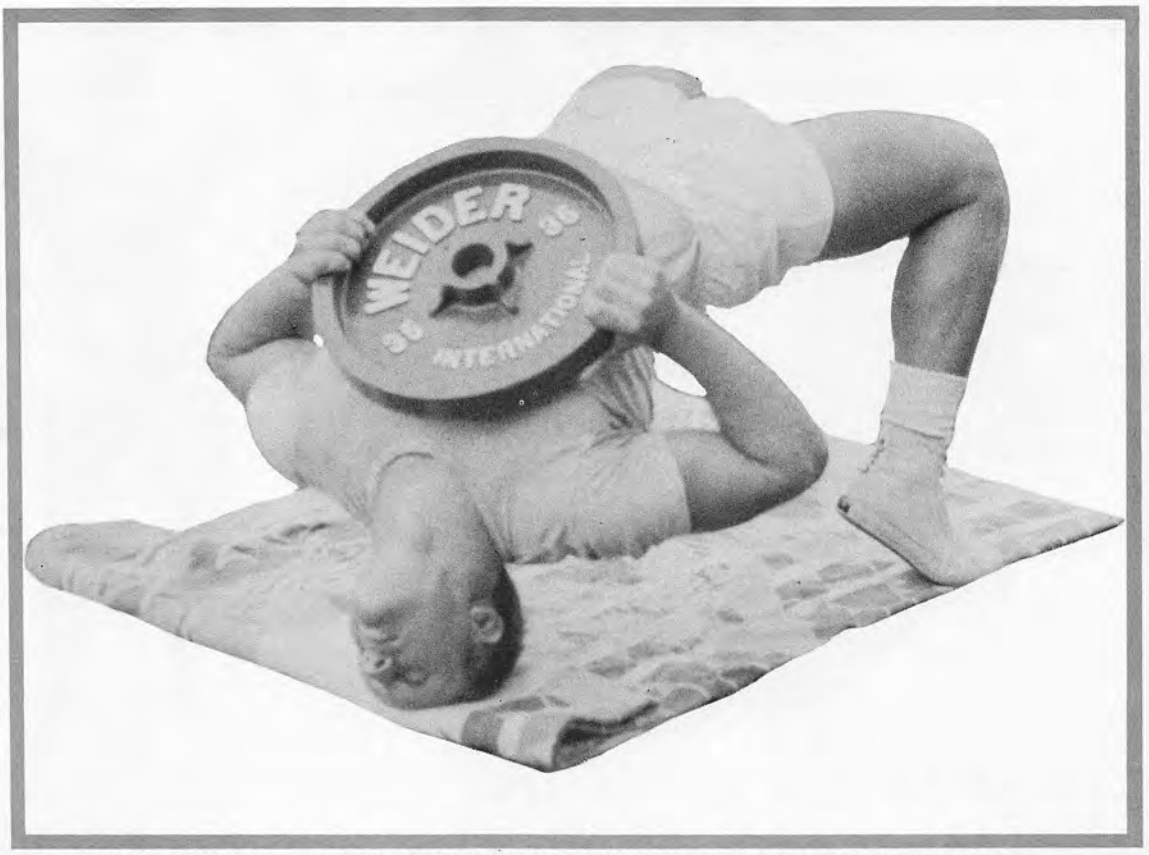
The headstrap is especially effective for developing the muscles at the back of the neck, as follows: put on the headstrap with the suspension straps and chain hanging in front of your chest. Attach a weight to the chain—five pounds is enough to experiment with at the start—lean forward and brace yourself with elbows on thighs. Keeping you rbody inclined forward and as motionless as possible, simply raise and lower your head over as great a range of motion as neck movement alone will allow.

(Continued on page 89)

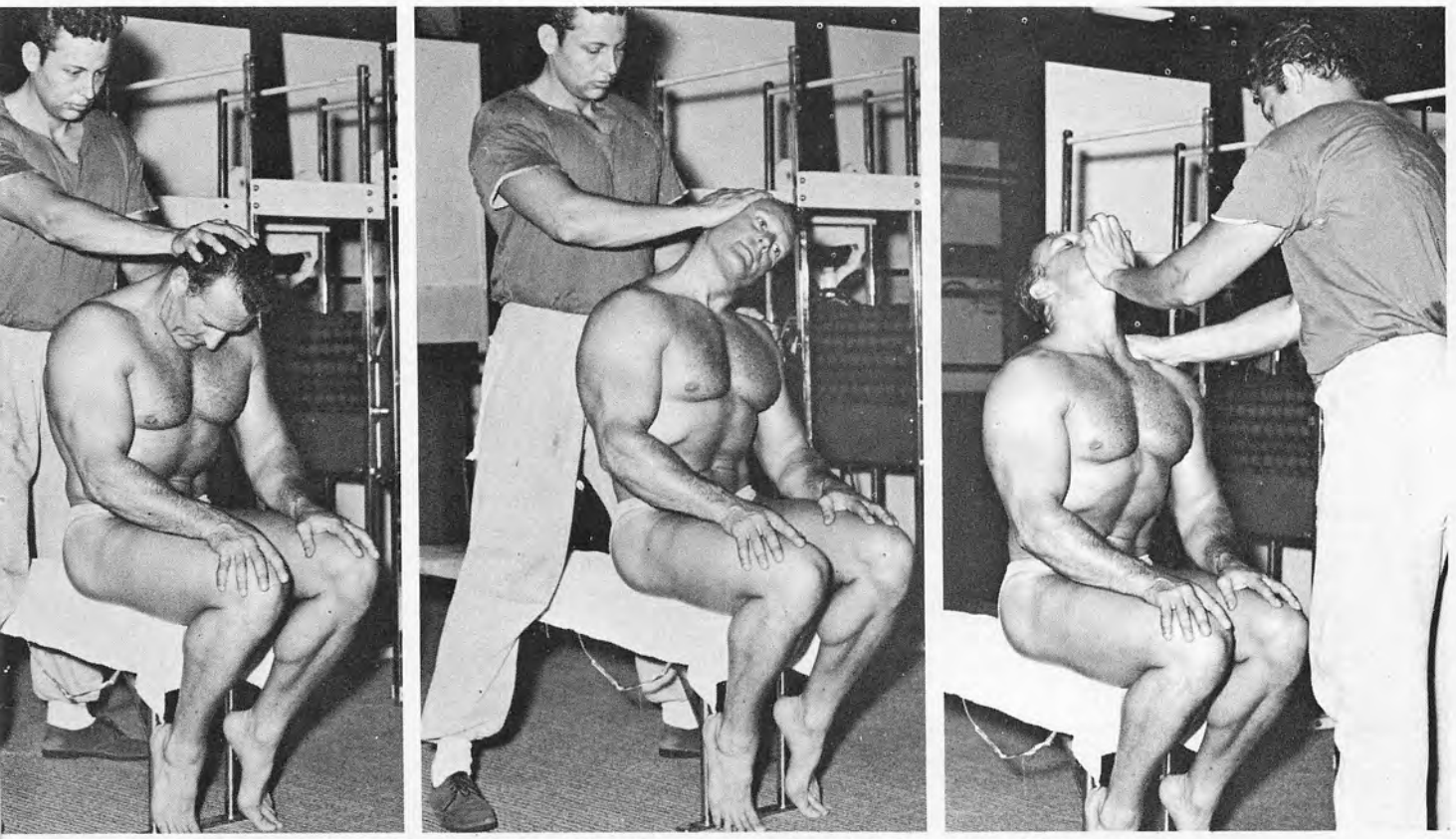
Jim Barnes, football co-captain at Appalachian State University, strap for neck development.

Author Clarence Ross keeps his own neck in shape with a head strap and dumbbell.

shows how to use a head



A wrestler and football player, Jim Barnes has found that bridging is one of the best ways to develop protective neck muscles.



Manual resistance, as demonstrated by Clarence Ross in the photos above, can be used to develop the neck from any angle.

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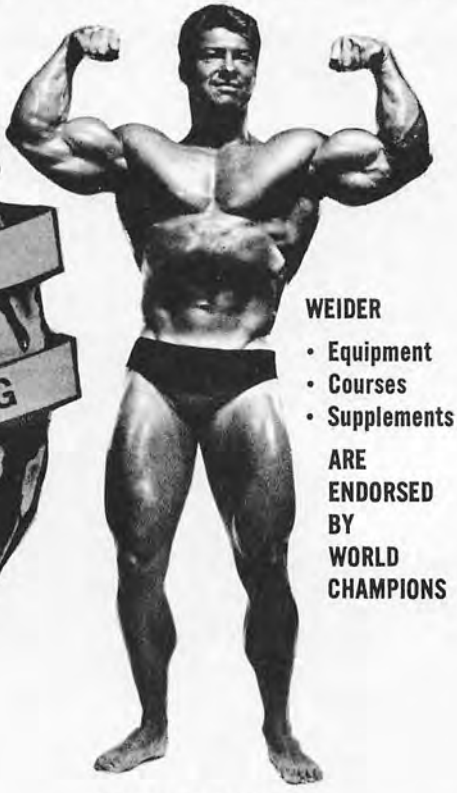

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RICHARD G. LAYMAN, *a professor of physical education and athletic coach at Murray State University in Kentucky, conducts the "Ask the Coach" department of* All-American Athlete. *If you have any questions about athletic conditioning and physical fitness, address them to Professor Layman, c/o* All-American Athlete, *801 Palisade Avenue, Union City, N. J. 07087. As many questions and answers will be published each month as space will allow.*

ask the coach

Track and field coach Charles Thomas, of Texas A&M, shakes the powerful right hand of Randy Matson, first man to put the 16-pound shot past 70 feet. (Photo courtesy Coach & Athlete magazine.)

Q "Are deep Knee Bends and full Squats really harmful to the knees? I know that they will develop tremendous leg strength, power, and size, but every time I go to a gym to work out someone invariably tells me they are dangerous."

A Dangerous? Hardly so. Harmful? Only possibly. The harmful effects of deep Knee Bends and full Squats may be much exaggerated. Certainly few injuries occur in the process of doing them. Dr. Peter Karpovich conducted an extensive study in which he learned that back, wrist, shoulder, and finger injuries were more common than knee injuries among weight lifters and that the over-all incidence of injuries in weight lifting was relatively low by comparison with other sports. In another study, Dr. Francis Drury found that former baseball outfielders had more knee trouble in later life than former catchers, who spend hours in the deep Squat position behind the plate. Drury also reported that average, non-athletic men had more knee trouble in later life than weight lifters, who had practiced deep Squatting. Certainly there are individual differences related to general physical condition, age, and leverage that are factors as to whether damage to the knees will occur. In day-to-day life we have little occasion to fully flex our legs. As a result, initial practice of deep Squats, with or without weights, may produce soreness and/or stiffness that may be misconstrued as an injury. On the other hand, Squatting is a common posture in many Oriental countries yet knee injuries are rare in these countries except those incurred in soccer. The human knee can learn to take full Knee Bends without harm; however, minor injury could occur to the joint structures if movements are not done gradually and progressively. You should condition your knees progressively—descend slowly at first and do not collapse or relax your knees in the low position. Treat your knees right and they will return the favor! On the other hand, if you are concerned about possible harmful effects, why not stop your knee bends at the parallel level? Squats done in this manner produce great strength and power without stretching the joints.

Q "Should an athlete who desires to increase his speed work only on exercises that develop speed?"

A In training, you need to develop all your muscles and organs. If your principle interest is speed, then use special exercises that contribute toward increasing it. You should, however, also include other exercises designed to produce general physical fitness. More than half of an athlete's training time is devoted to general fitness. An interesting study in Russia developed the information that one group of subjects working on exercises only to develop speed increased stamina and strength 10% while increasing speed 15%. A second group training for strength, speed, and endurance succeeded to the extent of 35% in stamina, 30% in strength, and 40% in speed! It seems that better results are achieved by a balanced (Continued on page 84)

Conditioning For Sports

THE HOW AND WHY

by Jess Jarver

with an introduction by John P. Jesse

The modern-day athlete trains all year 'round using a training plan based on progressive loading and the interval principle. The essence of the following article is the author's discussion of the basic problem involved in establishing a training plan—blending physical conditioning activities with skill work and still arriving at top form at the right time of the year. The article is a reprint of Chapter I of the most concise, yet one of the most comprehensive books ever written in the English language on the subject of conditioning for participation in competitive sports: The Now and Why of Physical Conditioning for Sport, *by L. Jess Jarver (published by Rigby Ltd., Adelaide, Australia, 1964).*

The author, Jess Jarver, an Estonian by birth, whose promising pole vault career was interrupted by World War II, emigrated to Australia in 1948. He has been employed as a senior field officer with the National Fitness Council for the past 16 years. In 1955 he attained the position of senior coach with the South Australia Athletic Association and since 1956 has been in charge of Track and Field Coaches training schools. From 1961 to 1964 he served as a member of the Australian Coaching Coordinating Committee. He acts as a reporter for Adelaide newspapers and appears on a regularly scheduled television program. He has contributed numerous articles on track techniques and conditioning to various athletic publications throughout the world. He is recognized as a world renowned authority in his field of endeavor and is quoted extensively by other writers. He is presently the editor of Modern Athlete and Coach, *a monthly technical track journal published by the National Fitness Council.*

In his position as a senior coach he has coached numerous Commonwealth and Australian athletes in the pole vault, decathlon, discus, javelin, triple jump, and the sprints. Many of these athletes have reached championship status.

As Jarver states, "Perhaps the only other interesting aspect in my rather dull life was the introduction to the 'Run for your Life,' campaign in Adelaide. With six nights a week coaching, reporting for the papers and television, a wife and two children, and a ten-hour working day with the National Fitness Council, there is not much time for anything else."

—John P. Jesse

An internationally-renowned Australian coach and physical training authority explains how the Foundation, Preparation, Competitive, and Rest phases of conditioning should be integrated for best results.

PLANNING TRAINING

Training is "bringing a person to a desired state or standard of efficiency." In competitive sport the desired efficiency is extremely high, and preparation for top performance demands careful planning and self discipline. A successful training plan must therefore cover all aspects of an athlete's life as it aims for the highest possible level of *physiological, psychological, and technical fitness.*[1]

A training plan for the field and gymnasium will not give maximum results unless the athlete is prepared to adjust his whole way of life and make sacrifices to his particular task. There are no short cuts to training as there is no substitute for hard, painful work and clean, healthy living. Though overtraining and staleness may occur, most athletes will never get close to suffering from them. "The danger of chronic overtiredness through daily athletic training is small . . ."[2] "To feel tired is not to be tired."[3]

Coaches and athletes have always tried to improve training methods. Their somewhat traditional approach to training, based mainly on experience, has been improved through the increasing assistance and interest of physiologists, doctors specializing in sports medicine, and physical education teachers. These combined efforts towards better training methods are at least partly responsible for the constantly improving performance in measurable sports such as track and field, swimming, and weight lifting. Other factors could well be better living standards, more interest in the sport, larger numbers participating, and improved facilities. Most people will agree with Forbes Carlisle that "the training of athletes for strenuous physical activities today is more an art and less a science . . . guiding lights for many coaches have been the

methods used by reigning champions and the most successful trainers."[4]

The human body is a complex organism, and physiological knowledge of the changes caused by training is still incomplete. The lack of factual evidence as to how training may affect some parts of the organism makes it complicated if not impossible to evaluate and prescribe training methods scientifically. Although many phases of training have been approved and established there are others still waiting on a resolution of conflicting opinions. The first man to run the mile under four minutes, R. G. Bannister, says that "training methods are dependent upon more factors than it is possible at present to analyze . . ."[5]

The following text attempts to summarize generally accepted physical conditioning methods and tries to explain why these methods are used. It does not aim to present a scientific analysis of training methods. Many statements and opinions may have been overlooked, sometimes accidentally, sometimes on purpose. Some assertions are a matter of limited opinion often based on practical experience without conclusive evidence.

Available research data, experiments, and training programs used by champions indicate that the modern athlete trains all year 'round. He has a powerful motive to achieve high standards of physical and mental fitness in athletic superiority. It is not known exactly how this superiority is achieved, but we may with some confidence assume that it results from a blending of inherited characteristics, the development of skill, and the use of generally accepted physical conditioning methods, including a training plan based on progressive loading and the interval principle.

PROGRESSIVE LOADING

Progression in training is based on the established principles from the easy to the difficult and from a little to a lot.

DeLorme,[6] working in the field of rehabilitation, developed procedures known as progressive resistance exercise. His original method was based on what he termed repetitions maximum, a load that could be moved ten times. The repetitions maximum had to be lifted in sets until 70 to 100 repetitions were completed. He later modified this to three sets of ten repetitions starting with half of repetitions maximum and finishing with the maximum. More recent evidence has shown that in progressive resistance exercise the full load should be carried from the outset and that three sets of six to eight repetitions maximum is the most effective training load.

DeLorme's method has since been used in weight training in several variations and has not only formed the basis of training for strength but also for training plans in general. "Since we regard DeLorme's principle applicable also for endurance training, for which the word load is more descriptive than resistance, we use the term progressive loading."[7]

The gradual increase in the intensity of training is one of the most important factors to be considered in planning a training schedule. Usually the training load is raised constantly although methods of progression

might vary. Zinovieff,[8] for example, developed DeLorme's technique by using a 100 repetition performance in sets with progressively reduced load as fatigue increased. McQueen's[9] "multipoundage" method used a similar principle.

Whatever the details of the method used the progressive increase of the rate of work should be applied. Weights are increased in weight training, new targets set in circuit training, harder demands are made on the respiratory-cardiovascular system in endurance training, and so on. Targets for fitness and skill are constantly moved higher. The essential principle of progressive loading to be observed is that the training load is increased proportionately to the increased fitness. Progressive loading is best adopted in an interval form so that the training plan has a rhythmical pattern of efforts and recoveries.

INTERVAL PRINCIPLE

"Rhythm has been named a characteristic of life. There is time for strenuous activity and time for resting."[4] The rhythmical effort and recovery pattern guides our everyday life. Most of us work during the day and recover while asleep at night. A week's work is followed by a recovery during the weekend and the same pattern applies to the yearly cycle with the annual leave forming the recovery phase.

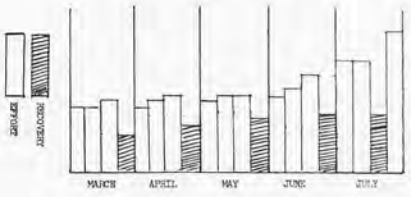
In training for sport, "the regular and planned pattern of effort and recovery phases during any one training unit is called the interval principle."[10] Mellerowicz[11] accepts the interval principle as "a general term to de-

scribe all forms of training with systematic changes of effort and recovery. Carl Dien [12] points out that interval training is based on Roux's theory of stimulation in a rhythmical form. "What today is called interval training is intended to bring about improved results through a continuous rhythm of rest and training and it was found in the long run that in this way on the one hand fatigue was diminished whereas on the other hand a stronger stimulus could be applied, leading to greater improvement of athletic results." [12]

The interval principle usually applies to all phases of training. A day's workout begins with warming up and harder tasks are followed by cooling down activities. "The training phase for the day must have a rhythm, i.e., it must be full of variations concerning the degree of overall effort as well as the degree and type of sheer muscular effort." [12] The weekly plan can show a gradual increase of work followed by a recovery interval or it can take a pattern of harder and easier training days interspersed with recoveries. "Days with close to maximum load must be followed by days of medium and limited loads. Overlooking the need for relaxing and rest days with different degrees of effort can lead to overtraining." [13]

The training plan for the whole year, like all other phases of training, has its own interval arrangement. According to the type of sport, individual development and competitive commitments, it should be divided into effort and recovery cycles. The yearly program usually reaches its peak during the competitive season and has the main recovery interval during the after-season rest period.

A typical training plan using progressive loading and interval principles is shown here from an actual training schedule of a rowing team. [14] Frequent changes in effort and recovery phases are well combined with a gradual increase of the working load. Although in this particular case the plan is made for a five-month period the same principles can be used in weekly, monthly, and yearly training schedules.



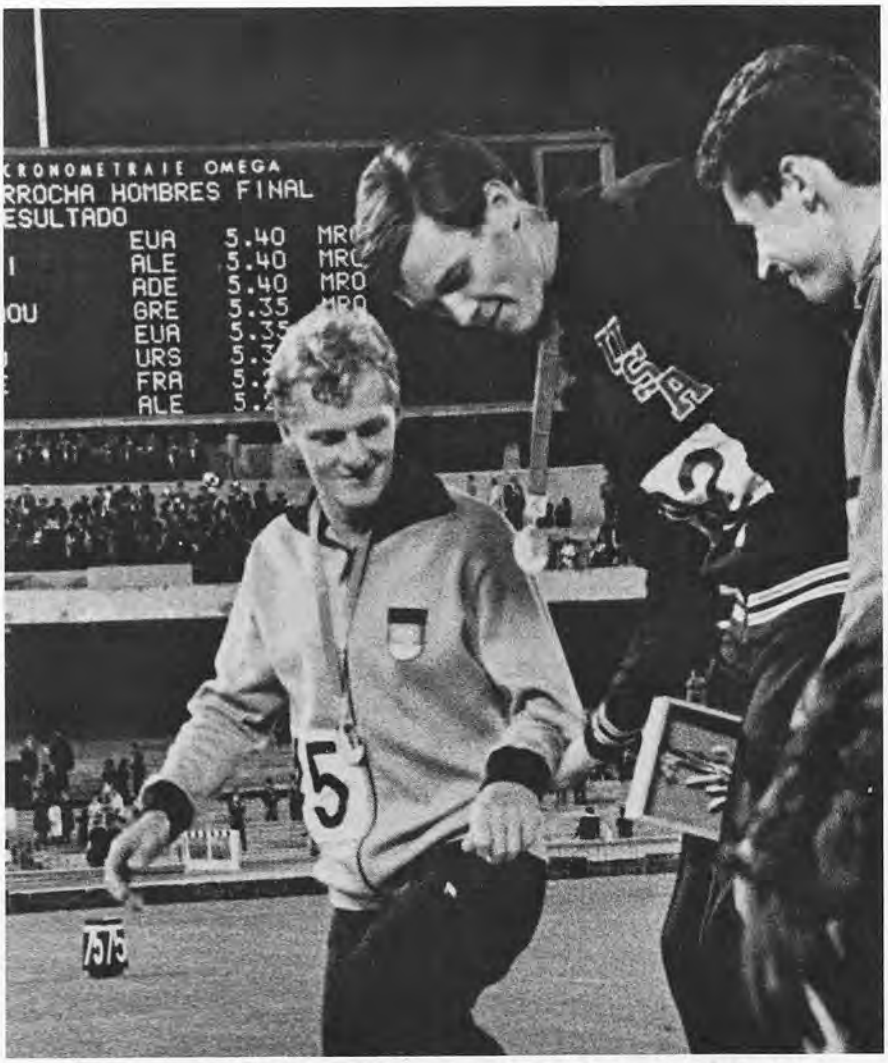
PLANNING A YEARLY SCHEDULE

Knowing the progressive overloading and interval principles, the main problem is to blend physical conditioning activities with skill work and to be in top form just at the right time of the year.

Physical conditioning and skill training overlap each other and the distribution of effort between the two varies considerably according to the activity and individual ability. In some activities physical conditioning and skill practice can be carried out simultaneously, in others they have to be separated. In swimming, running, and most team games, skills can be included in the conditioning work or vice versa. There are, however, activities where this is not possible. For example, a runner while training to improve his endurance can at the same time correct faults in his running action; but a hammer thrower will find that, after a while, throwing his implement only improves his skill and is not sufficient to increase his strength.

Even when skill training and physical conditioning can be carried out simultaneously it seems correct to assume that a solid physical conditioning phase is needed in most training programs. Even top gymnasts use weight training and isometric exercises despite the fact that the level of strength achieved through practice of skills on apparatus would satisfy most sportsmen.

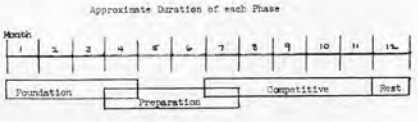
Provided we accept the need for year-around training, and assume that physical conditioning in most vigorous sports requires special attention, it seems helpful to divide the year into four phases. These four



Bob Seagren (center) had to come within a half-inch of his 17′ 9″ world record in the pole vault to beat Schiprowski of West Germany and Nordwig of East Germany for an Olympic gold medal at the 1968 Games. (UPI photo)

phases are not the same length nor do they start and finish at the same time. Overlapping each other they have to be adjusted to the needs of different activities and different individuals in different ways.

By dividing the year into four we could name the divisions *active rest*, *foundation*, *preparation*, and *competitive* phases.



Active Rest is the time immediately after the end of a season. Other sports can be played for variety, injuries received during the season nursed, or some time spent in correcting obvious bad points in technique discovered during the yearly recovery phase, but complete rest may be dangerous as it will reduce the achieved level, which should preferably be higher than the year before at the same stage.

It seems unwise to omit the active rest phase although it can apparently be done sometimes with success. Rajki,[15] who has used a twelve-month training plan for Hungarian water polo teams, simply reduced the intensity of training after the end of the competitive season. However, at the start of the physical conditioning work, supplementary sports like skiing, running, boxing and gymnastics were included in the program to break the boredom of constant work in the water.

The Foundation Phase is the time when hard physical conditioning takes first priority in the training programs. It lays a solid foundation of fitness upon which skill can be built at the later stages of training. The foundation phase is the most painful stage of training. The training load in most cases reaches here the highest peak for the year in an attempt not only to build up physical efficiency but through tough and punishing effort to set a new mental approach to tasks that may have appeared impossible.

Usually only a limited amount of skill work is included in this phase, but those involved in technically complicated events must spend part of their training in practicing the actual techniques.

Whereas the active rest tends to have a stimulating recovery effect on the athlete, the foundation and the following preparation periods could develop fatigue as a result of monotony. It is the coach's job to avoid this and the exercises should have a lot of variety.

Preparation Phase. Somewhere during the change from the foundation to the preparation phase the total training (Continued on page 80)

Titanic Track & Field Two

its hammer thrower

in the great POWER C

by Dick Tyler, West Coast Editor

Some of the greatest athletic contests take place as impromptu training competitions when two or more outstanding men get together for a workout and decide to have a go at some event or other.

I was fortunate enough to witness just such a contest one day at Bill "Peanuts" West's home gym in California.

Photographer Art Zeiler and I walked toward Peanuts' muscle factory one day to the accompaniment of the familiar sounds indicating that some very strong men were throwing a barbell

Frenn

George Frenn, shown finishing a Power Clean with 310 pounds, holds the world record for the 35-pound weight throw (73′ 3½″) and had the second best U.S. throw with the 16-pound hammer in 1968 (226′ 6″).

some Tussle . . .

vs. shot putter

LEAN CONTEST

around. CLANK . . . WHAM . . . CRASH—the sounds got louder as we approached.

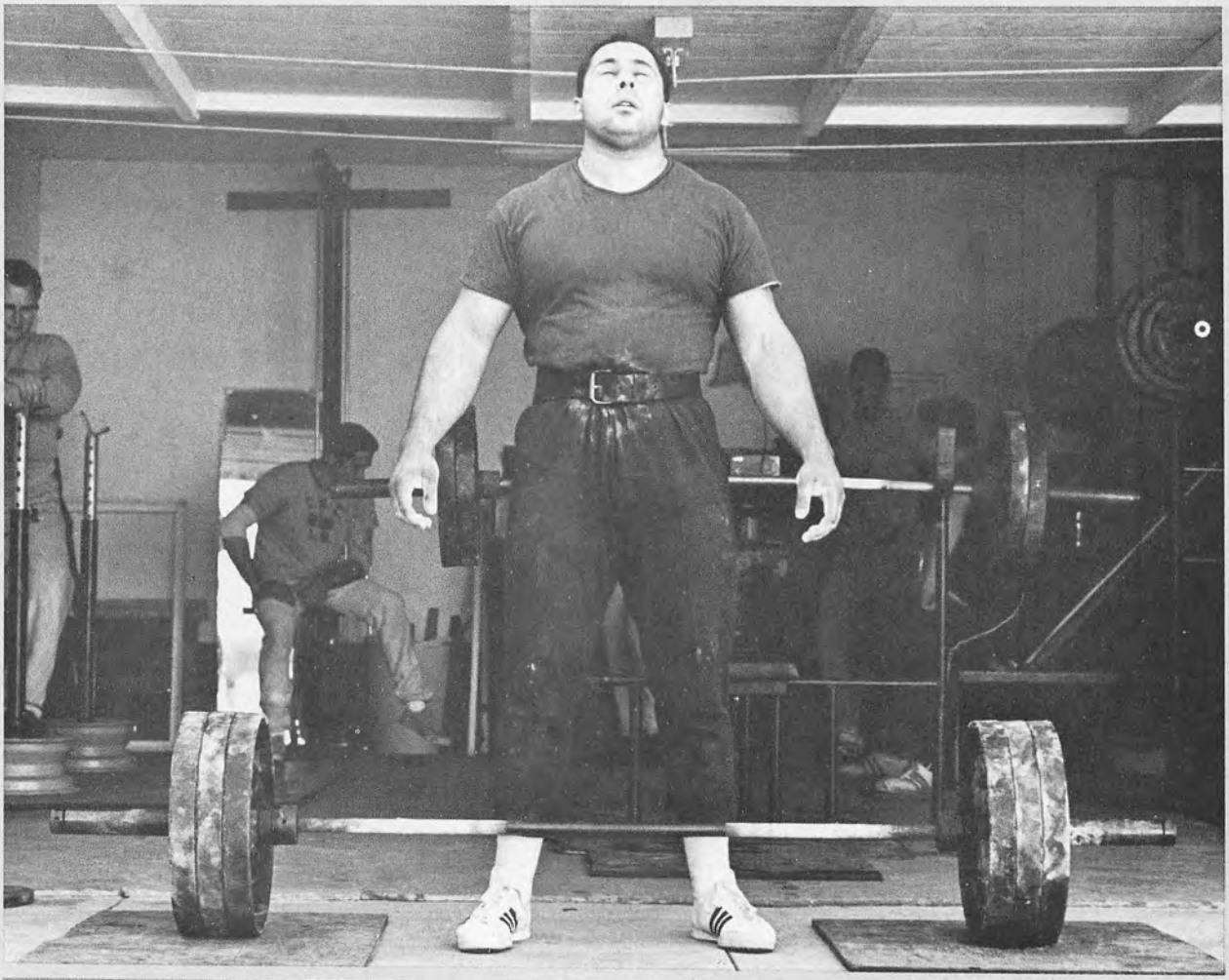
"Sounds as though the boys are playing," Art remarked, as we entered. Sure enough, the "boy" who was playing at the moment proved to be George Frenn, one of America's leading hammer throwers and the world record holder for the 35-pound weight throw. His playground was the concrete driveway in front of Peanuts' garage-gymnasium.

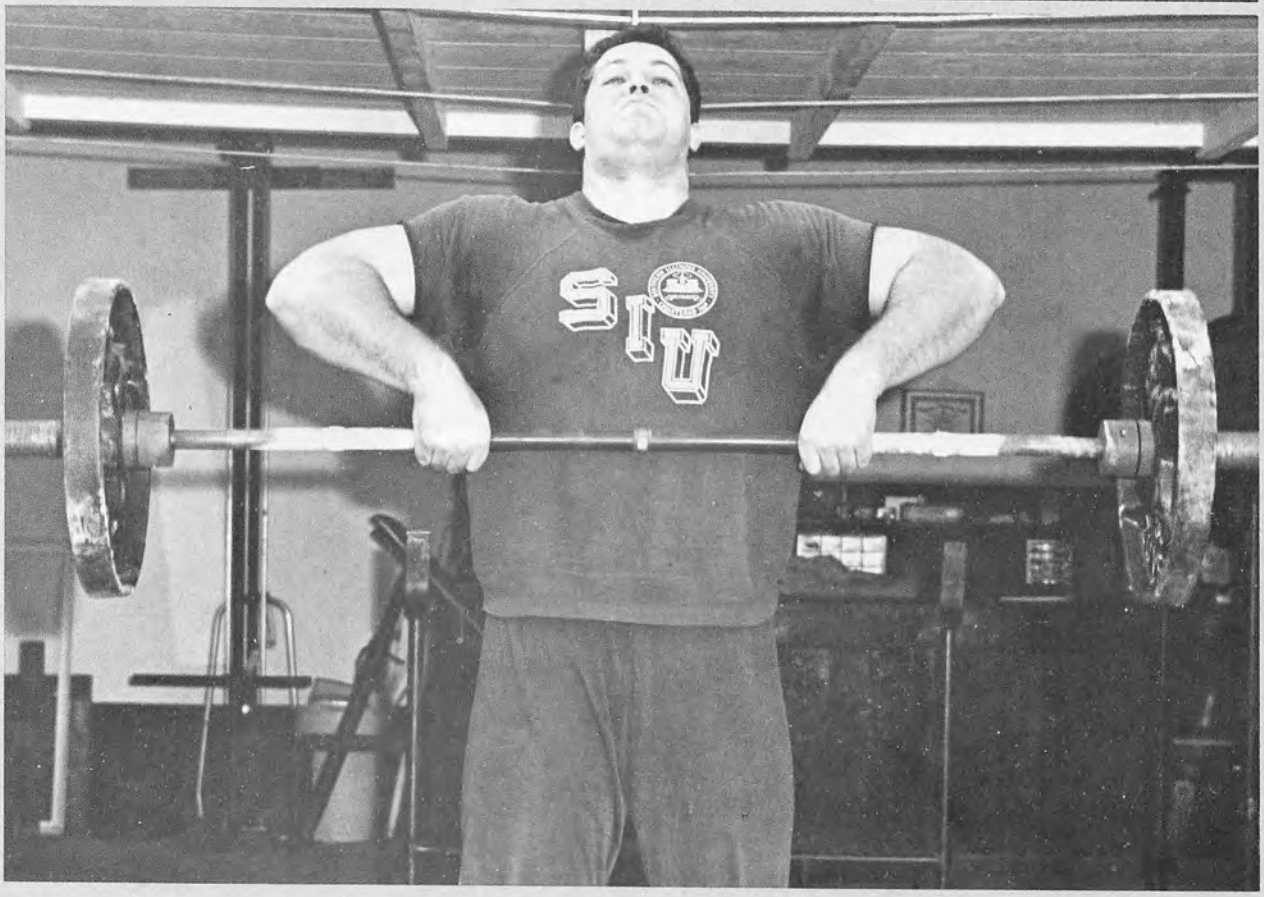
"Dick," big George greeted me, "today I'm gonna try to Power Clean 350 pounds."

"I thought you were strictly a standard power lift man,

Woods

George Woods, pictured in the mid-range of a 310-pound Power Clean, is U.S. indoor shot put champion, Olympic silver medalist in the shot put, and has the third best put of all time with the 16-pound ball.




SIU

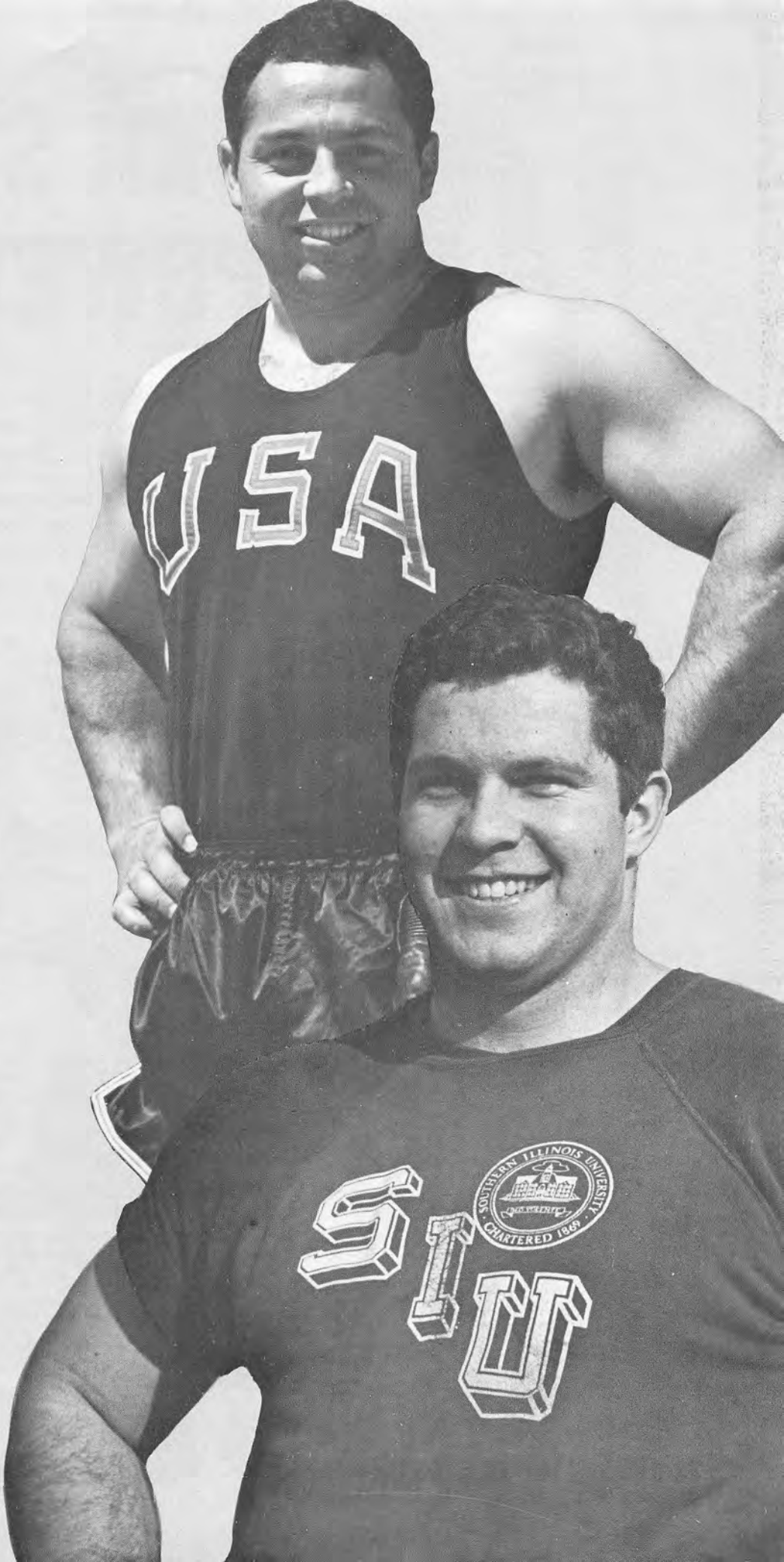
George," I replied. "Are you moving over into Olympic style weight lifting now?" George just smiled and hauled a warm-up with 255 pounds to his chest.

For the uninitiated, the power clean is one of the best basic strength and power builders, used by competing weight lifters and by athletes in all sports, especially those that require great power. It looks simple enough. The exerciser stands close to a barbell, his feet on a line and extending under the bar so that the bar brushes or almost brushes his shins. He bends his legs and leans forward to grasp the bar with an overhand grip, slightly wider than shoulder width. Then he crouches over the weight and pulls from a position with his legs bent, hips lower than his shoulders, and his back flat. With minimal movement of his feet and with no more than a quarter bend of his legs as he catches the weight at his chest, the exerciser hauls the weight up from the floor and whips his elbows forward under it to hold it across his upper chest.

Frenn quickly worked up past 300 pounds, but when he reached 335 it was obvious that the load was making him work hard, slowing his powerful upward pull. But he made it and finally loaded the bar to 352 pounds. By this time Frenn was sweating profusely from every pore. He paced up and down, psyching himself up to a real hate for that inanimate object, building his determination to lift it.

Feeling ready, he approached the weight. He looked down at it, hard, daring it to defy him. He placed his hands carefully and I could see his grip become firm enough for his fingers to turn pale. George lifted his head and with a roaring grunt powered the weight chest high. But he couldn't hold it. Unfortunately he was unable to whip his wrists over and secure the weight against his chest.

Down came the bar, but only to his thighs. Without a pause, Frenn tried to power it up again, but again he failed. Twice more he tried, after resting, (Continued on page 87)



(Opposite page, top) Getting set to Power Clean 315 pounds, George Frenn talks himself into readiness. (Opposite page, bottom) Warming up with 135, George Woods shows the all-the-way pull used in the Power Clean. (Right) George Woods, in the foreground, and George Frenn typify the type of massive, powerful man it takes to succeed in shot putting and hammer throwing.

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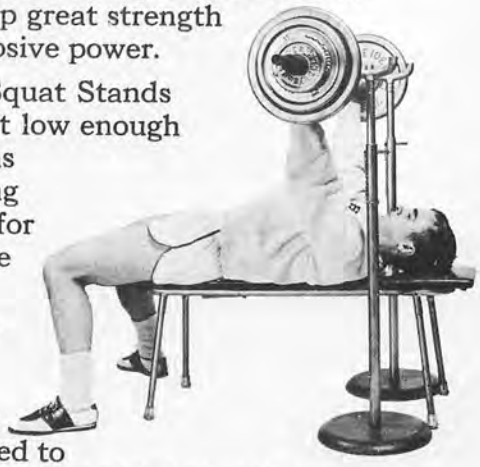
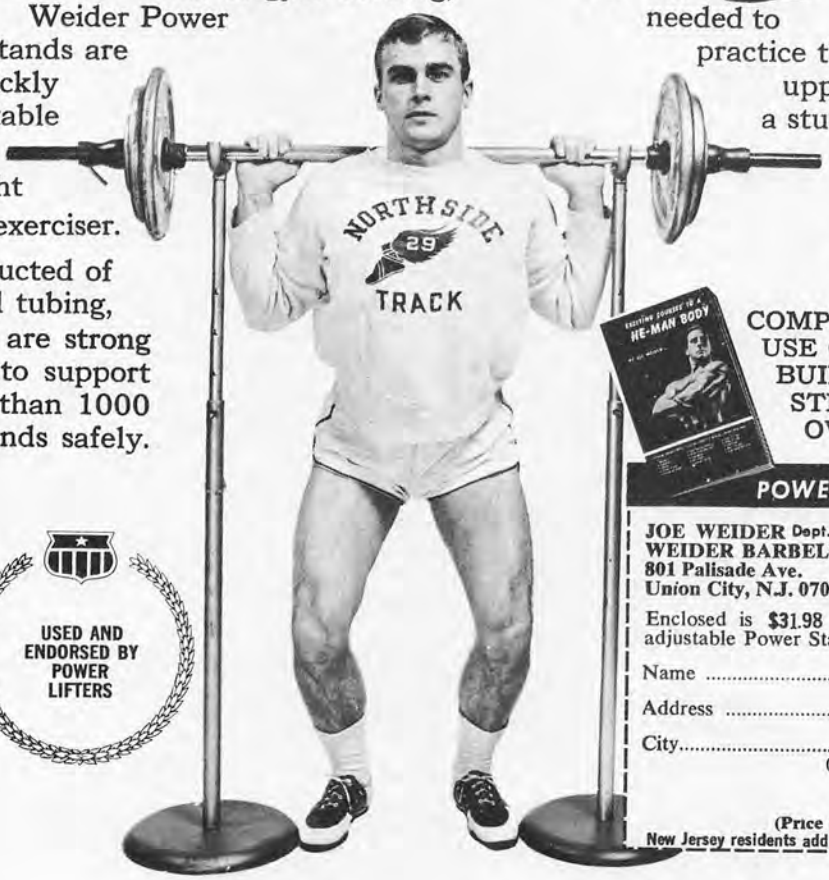
Weider Squat Stands can be set low enough to serve as supporting uprights for the supine press on bench.



All that's needed to practice this important upper body exercise is a sturdy bench to set between the stands.



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Husky former athletes are notorious for letting themselves get out of shape. Here's how one, a policeman, fights the trend....

Ex-Football Player Keeps In Shape With A Half-Hour Workout Daily

by Jim Murray

Target practice at the range is both necessary and fun for police officer Bill Zorichak. He considers arm and shoulder strength developed by exercise aids his marksmanship.

His name is Bill Zorichak. He's a cop. Those are facts.

But Bill Zorichak doesn't look like the cops you see on TV or in movies. He looks more like an ex-football player from Pennsylvania's coal regions. He's that, too. But his present job is policing the bridges that connect Pennsylvania and New Jersey, usually the one at the point where Washington crossed the Delaware during the Revolutionary War. Bill is the kind of officer who's friendly and helpful to those who need asistance, but who has the beef and know-how to maintain order when necessary.

Big Bill Zorichak likes the Bench Press exercise, as shown here with an easy 270-pound effort. (Hollendonner photo)

Big Bill, who stands 5′ 8″ and weighs a burly 230 pounds, takes his job seriously. He studies the duties of a policeman and also tries to live up to his responsibility by keeping in condition during his off-duty free time.

Looking at Bill, seeing his good-natured expression and noting that he has the general configuration of a large and particularly sturdy fireplug, you might get the idea that his favorite activity is eating. The fact of the matter is that eating is only one of his favorite activities. He's also a voracious reader of both books and periodicals, is addicted to physical exercise, and enjoys practicing shooting at the firing range with his service .38 and a target model .22 automatic.

"I hope I never have to use a gun on the job," Bill says, thoughtfully, "but if I do, I want to know I can hit what I'm aiming at—and nothing else."

Bill's favorite form of physical training is exercise with barbells and dumbbells. (Continued on page 78)

Power Pack Your Back WITH DEAD LIFT TRAINING

by Joe Weider,
Publisher and Editor of Muscle Builder Magazine

The dead weight lift is favored by champion athletes for developing great back and grip strength, and total body power

One of the most universally-practiced exercises in programs designed to build strength for athletic performance is the ominous-sounding "dead weight lift." Probably one reason for its wide use is that it is both easy to learn and result-producing. It's easy to learn because it is the most natural lifting action possible for a creature standing upright like a man. It's result producing because large muscle groups are involved, making it possible to develop great strength in a relatively short time.

The simplicity of performance of the Deadlift is deceptive, however, for though it's true that you just "bend forward and pick the weight up," there is some know-how involved to obtain good results and avoid painful strains. When you consider that a powerful giant like shot put record-holder Randy Matson could obtain good strength-building effects from deadlifting 300 pounds for several sets of six repetitions, you might wonder why 226-foot hammer thrower George Frenn feels called upon to work up to single lifts with considerably more than twice as much weight.

There are two reasons: (1) Frenn is as interested in winning power lift contests as he is in throwing the hammer, and (2) heavy deadlifts are more closely related to hammer throwing than to putting the shot. Incidentally, when Matson works with a 300-pound weight, he concentrates on moving more quickly than is possible with a heavier poundage.

Lifting the heavier weights is a good way for any strong athlete to get stronger, however, and the increasing number of power meets that are being held provide a competitive outlet that adds incentive to off-season training. These meets offer a challenge to men of all sizes, too, not just 240-pounders like George Frenn. Deadlifting will build great strength for a 120-pound wrestler, and he can get just as much fun out of winning a trophy in the bantamweight class as Frenn does from out-lifting the bigger men.

In almost every weight class, from 123 to unlimited, the Deadlift record is the heaviest of the three lifts contested. Occasionally a super strong athlete with perfect leverage and powerful legs will be able to Squat with more than he Deadlifts, but usually the Deadlift is the ultimate way to raise the heaviest possible poundages with a standard barbell.

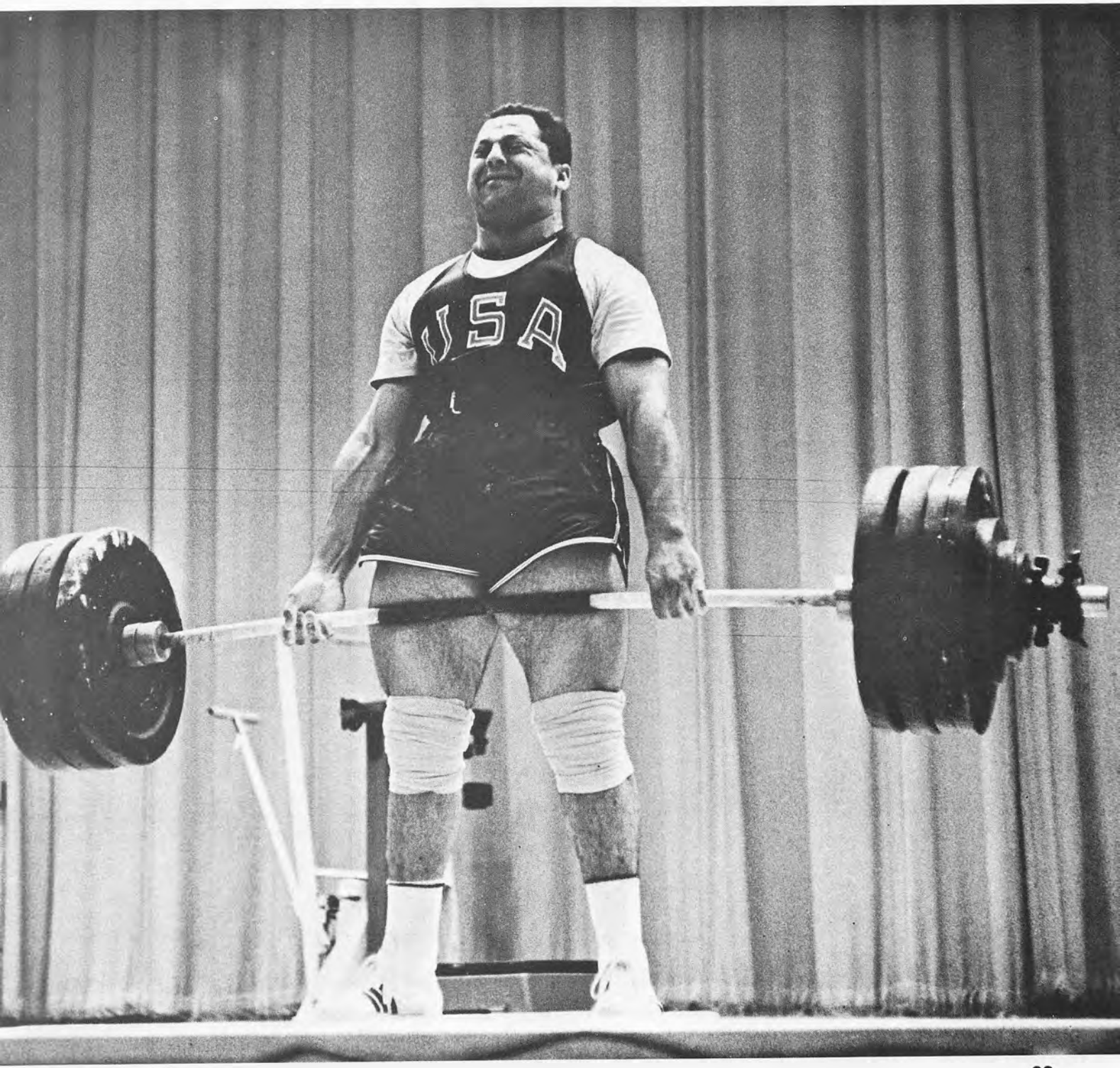
If an athlete can handle, say, 300 pounds in the Bench Press, 400 pounds in the Squat, and 500 pounds in the Deadlift—and these are proportionate lifts—a 10 per cent increase is most meaningful in the Deadlift. That is, a 10 per cent increase in the lifter's Bench Press would add only 30 pounds to his total while a 10 per cent increase in the Deadlift would add 50 pounds.

Undoubtedly certain men have leverage advantages over others in the Deadlift, just as some are better Pressers due to natural construction, but generally speaking the Deadlift provides a good gauge of your back, hip, leg, and grip (Continued on page 89)

The Deadlift is a great strength builder for any athlete, but especially for hammer throwers such as George Frenn. The massive Frenn believes that developing the power to Deadlift more than 700 pounds has helped him become one of the best hammer throwers ever to compete for the U.S.A.

POWERLIFTING

Series Number Three



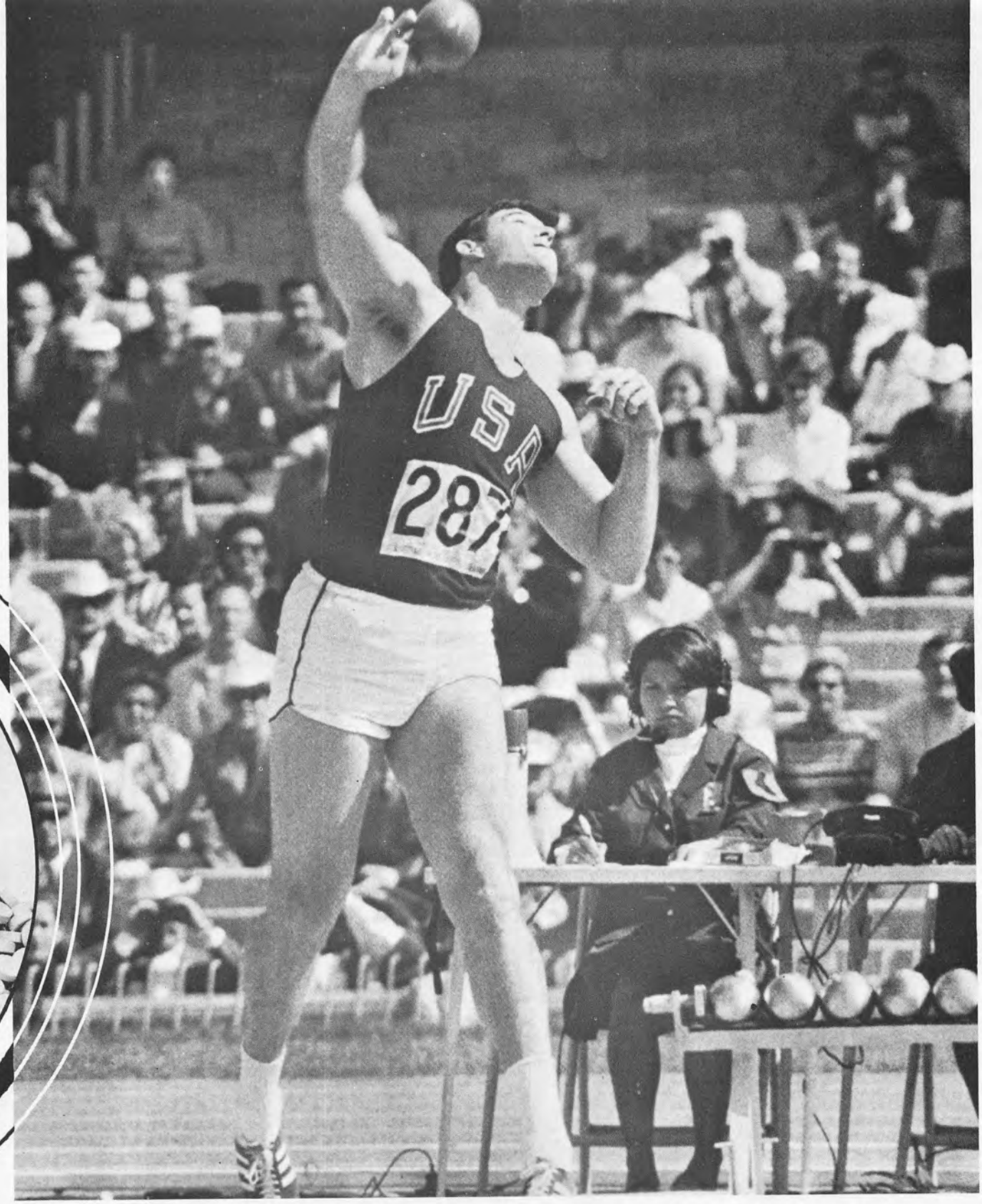
PROTEIN NEEDS OF AN ATHLETE

A FRESH APPROACH TO AN OLD PROBLEM

Janis Lusis of Russia, left, holds the world record for the javelin throw at 301′ 9″ and Randy Matson of the USA, opposite page, tops all shot putters with his 71′ 5½″. Both won Olympic gold medals, though short of the record distances.

as told by
George Frenn to Ben Weider
President of the IFBB

Manipulation of diet to achieve improved physical performance has been practiced by athletes since time immemorial. At one time men swallowed powdered lion's teeth to make them strong. Similar practices are still carried on in primi-



tive cultures. For many centuries it was thought that violent muscular exercise required the eating of large amounts of meat. This "old wives tale" was subsequently disproved by documented research evidence.

Today, many nutritionists, coaches, and physical educators have gone on record as saying that what the athlete's body really needs is added amounts of protein. The purpose of the additional protein is to help fatigued, broken-down muscle tissue rebuild itself.

The theory concern- (Continued on page 81)

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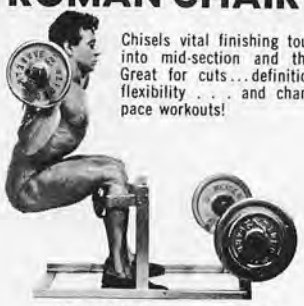

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Bomb/Blitz the Thigh Biceps and Frontal Thighs for massive size and "cuts". Train your legs as the advance champs do with this spectacular device. Get it NOW at a fraction of what it costs the most exclusive gyms in the country. Built to take a lifetime of punishment—constructed of 1½" structural angled steel and 2" flat for stock ajustable for any length legs, handsome heavy-top foam rubber seat covered in luxurious red leatherette. Finished in red and gold. Worth easily $400 — **yours for only . . .**

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Hate doing squats? You can still build thick, Herculean thighs and massive calves on this Pro Muscle Builder! Just slip onto the well-padded solid steel base and press the precisely-engineered weight holder up and down for bulk and power gains—in complete comfort! It's adjustable—safe—sturdy (supports up to 1000 lbs.). Finished in handsome red and gold, it's a MUST for your gym.

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Great, easy new way to etch out diamond-shaped, powerful, bulging calves! **Direct action** isolates the calf muscles — builds twice the bulk, symmetry and "cuts" in half the time. Especially valuable for performing Staggered Sets. Sturdily-built, the machine enables you to use hundreds of lbs. in safety and comfort. Seat can be used to work other body parts, too.

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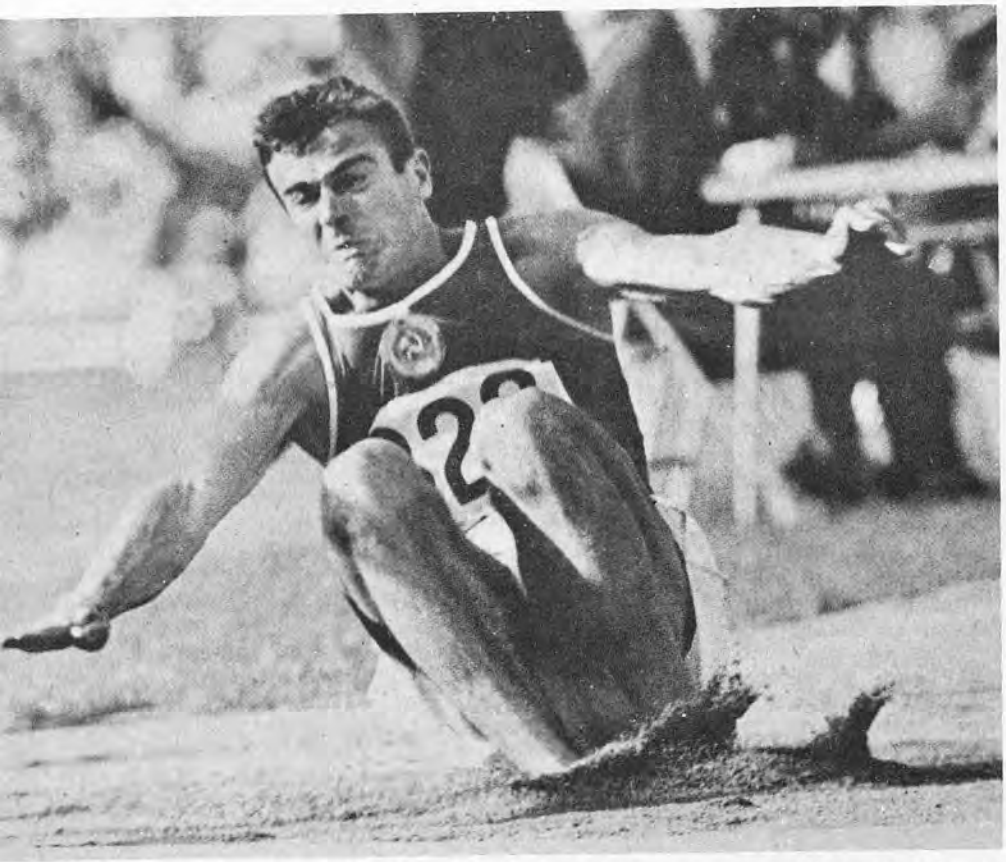
TRAINING for LEG POWER and JUMPING ABILITY

An experiment designed primarily to aid basketball players developed information of value to high jumpers, long jumpers, and all athletes who need strong, springy legs . . .

by James R. Hanley
Professor of Physical Education
Lake Superior State College



The importance of leg power in athletics is shown graphically by the efforts of Jim Hines (left) and Russian triple-jump champion Saneyev (above). Hines won the Olympic 100-meter dash for the USA while Saneyev copped an Olympic gold medal in the hop, step, and jump.

DEAD WEIGHT LIFT.

PARTIAL SQUAT.

STEP-UP ON BENCH.

DEEP SQUAT.

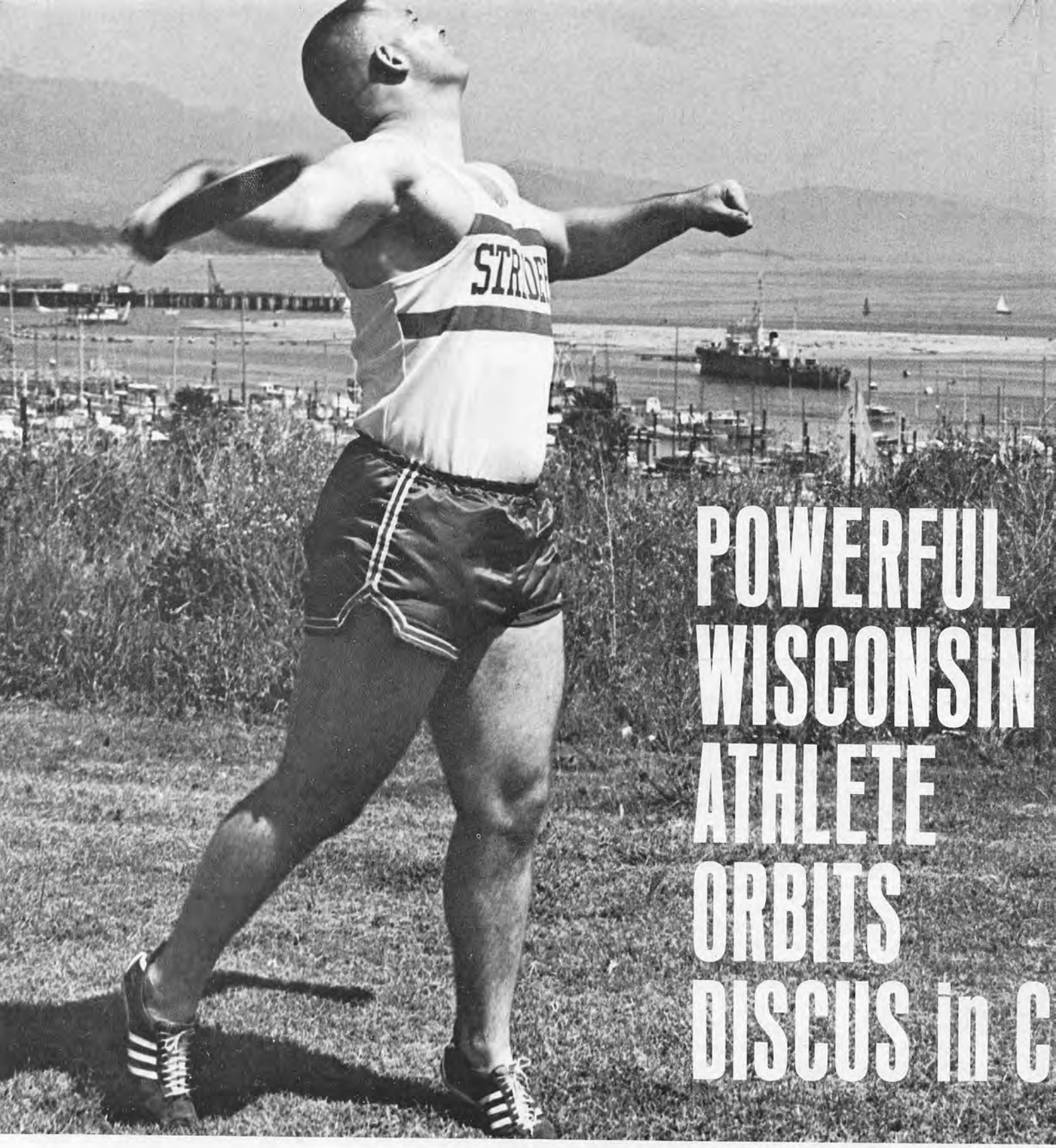
John Naismith is probably turning over in his grave. The changes that have taken place since he invented basketball in 1892 have completely revolutionized the game. It has progressed from the peach baskets Naismith tacked up at Springfield College to packing the house at the Astrodome; from the 4-2 scores of the '20s to the point where Wilt Chamberlain alone could rack up 100 points in a single game.

Today the game of basketball involves many diverse and complex skills. In no other team sport do we expect every man on an entire squad to be so versatile: the modern player must master shooting, dribbling, passing, rebounding, and complicated patterns in order for the team to win.

Successful coaches tend to disagree as to which of the above skills are most important, but they do agree that if their teams are to win, all their players must possess them to a high degree. Even though a coach may stress shooting, his players must also run, dribble, pass, and rebound well. Those who stress running —the fast break and the full-court press—must also have players who can shoot. You can't win if you can't score.

You can't score if you can't get the ball, either, which brings us to the importance of being able to jump straight up . . .high! Vertical jump ability is important to basketball from the time the game begins with the center tap until the last rebound is grabbed off the boards as the final horn sounds.

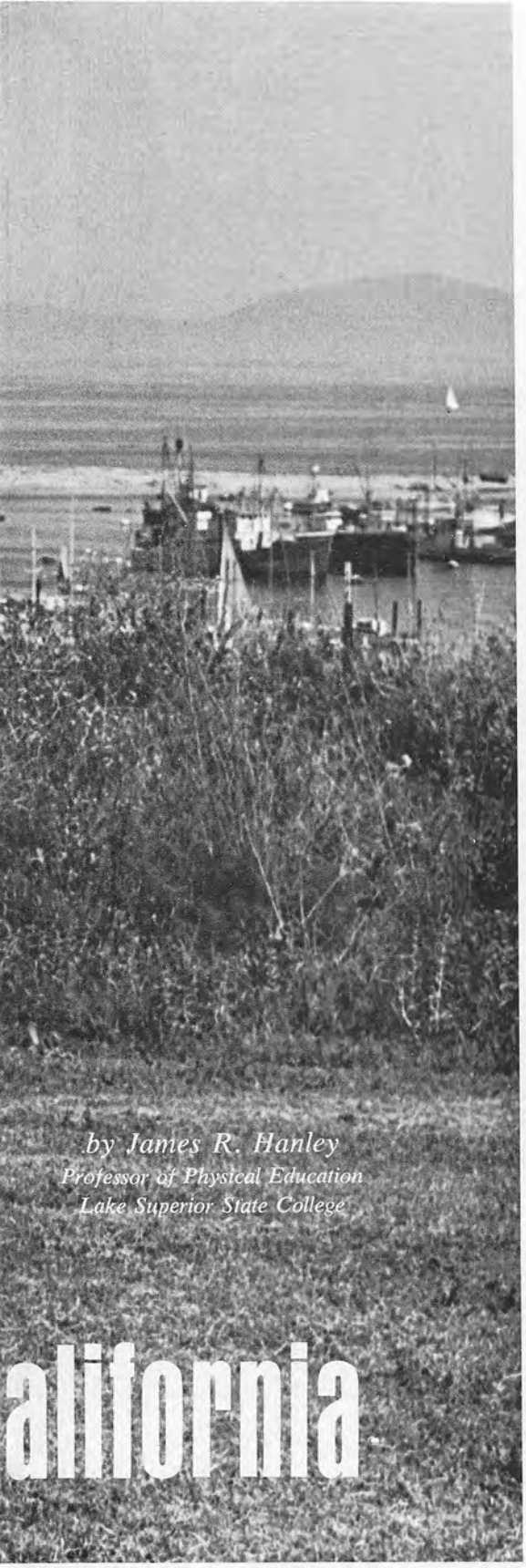
Today's coach develops fundamental skills in (Continued on page 79)



POWERFUL WISCONSIN ATHLETE ORBITS DISCUS in C

Curt Harper: How He Trains

The United States has its share of world championship class discus throwers, an exclusive fraternity of super athletes who can spin the classic Grecian platter 190 feet or more. Among the most recent entrants into this brawny brotherhood is powerful Curt Harper, a Wisconsin native now competing for the Los Angeles Striders.



by James R. Hanley
Professor of Physical Education
Lake Superior State College

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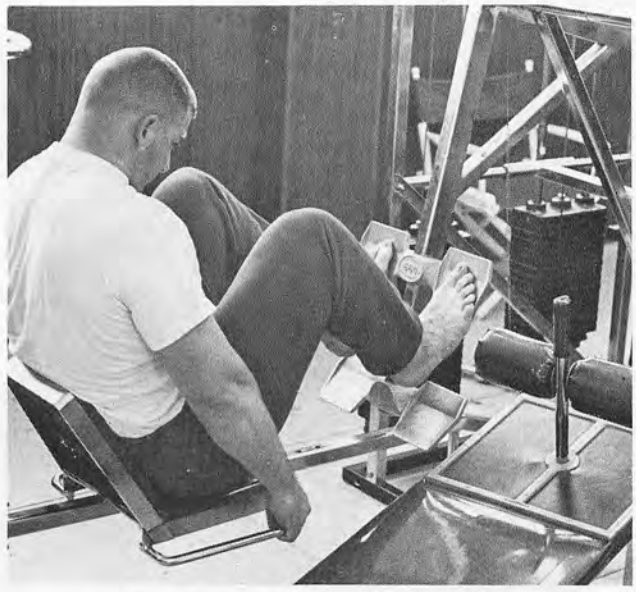


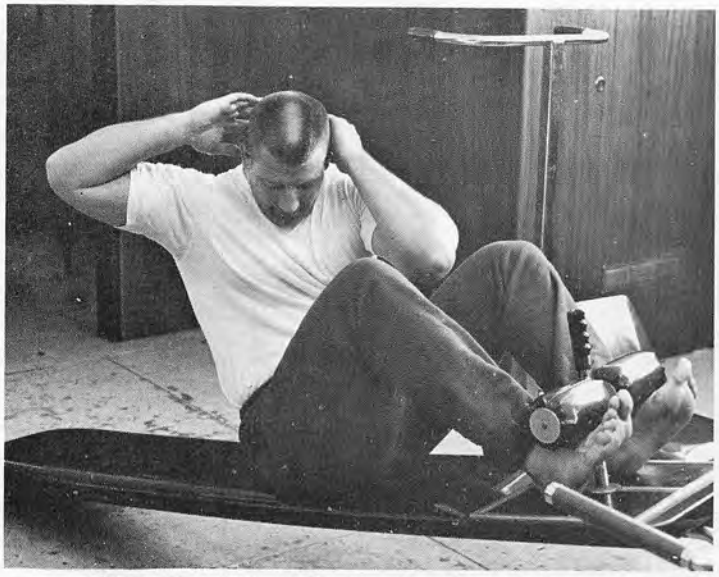
Leg Presses for repetitions with up to 420 pounds develop field event power.

Incline Presses, one of the best exercises for discus-throwers, are favored by Harper, who uses from 250 to 330 pounds.

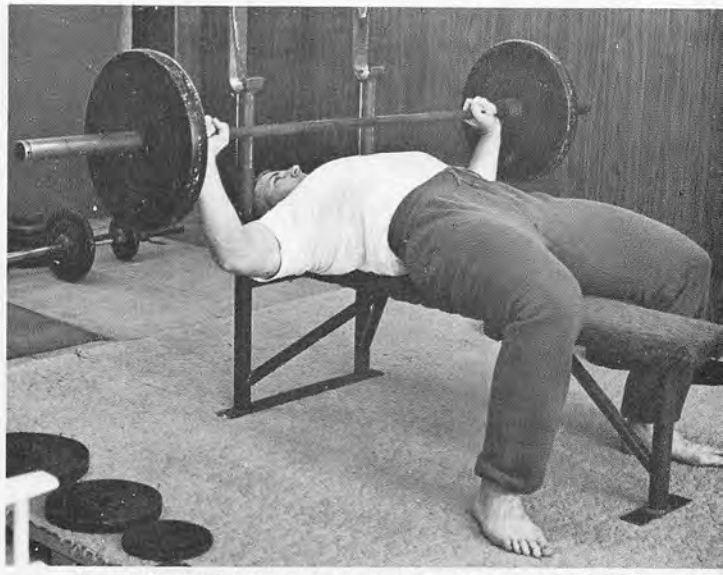
Extra leg strength comes from extensions against heavy resistance.

Curt showed promise of greatness before leaving his home state. Competing for Marinette Central Catholic High School in 1957, he won the Wisconsin state shot put and discus titles. Marinette Central is located near the small northern Wisconsin community of Peshtigo, Curt's home town, some 30 miles north of Green Bay.

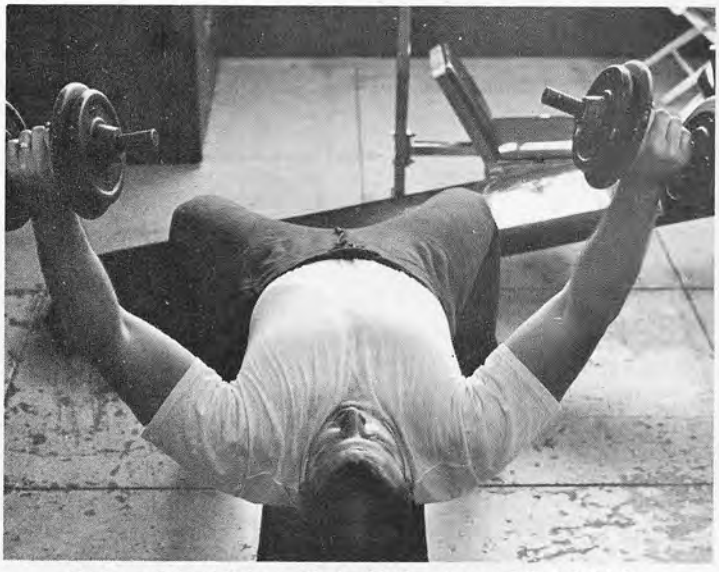
Curt Harper: How He Trains



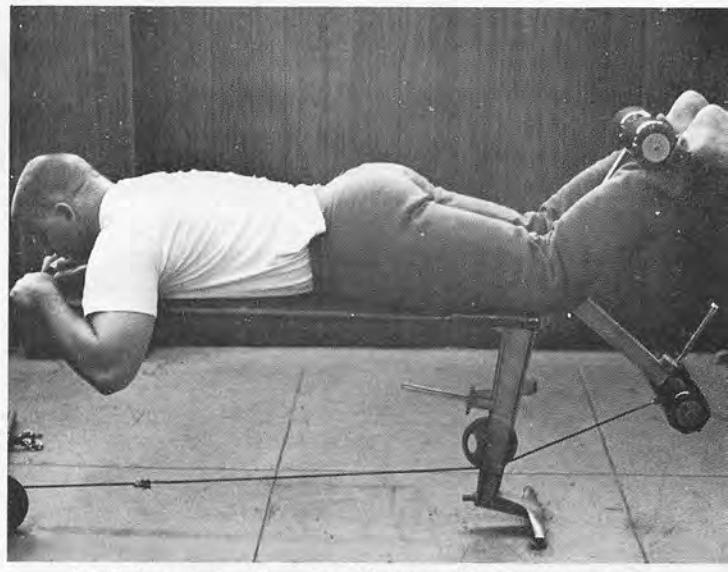
Situps with a twist provide torso strength that is important for the discus throw.



The regular Supine Press on bench is a must for all field event men.



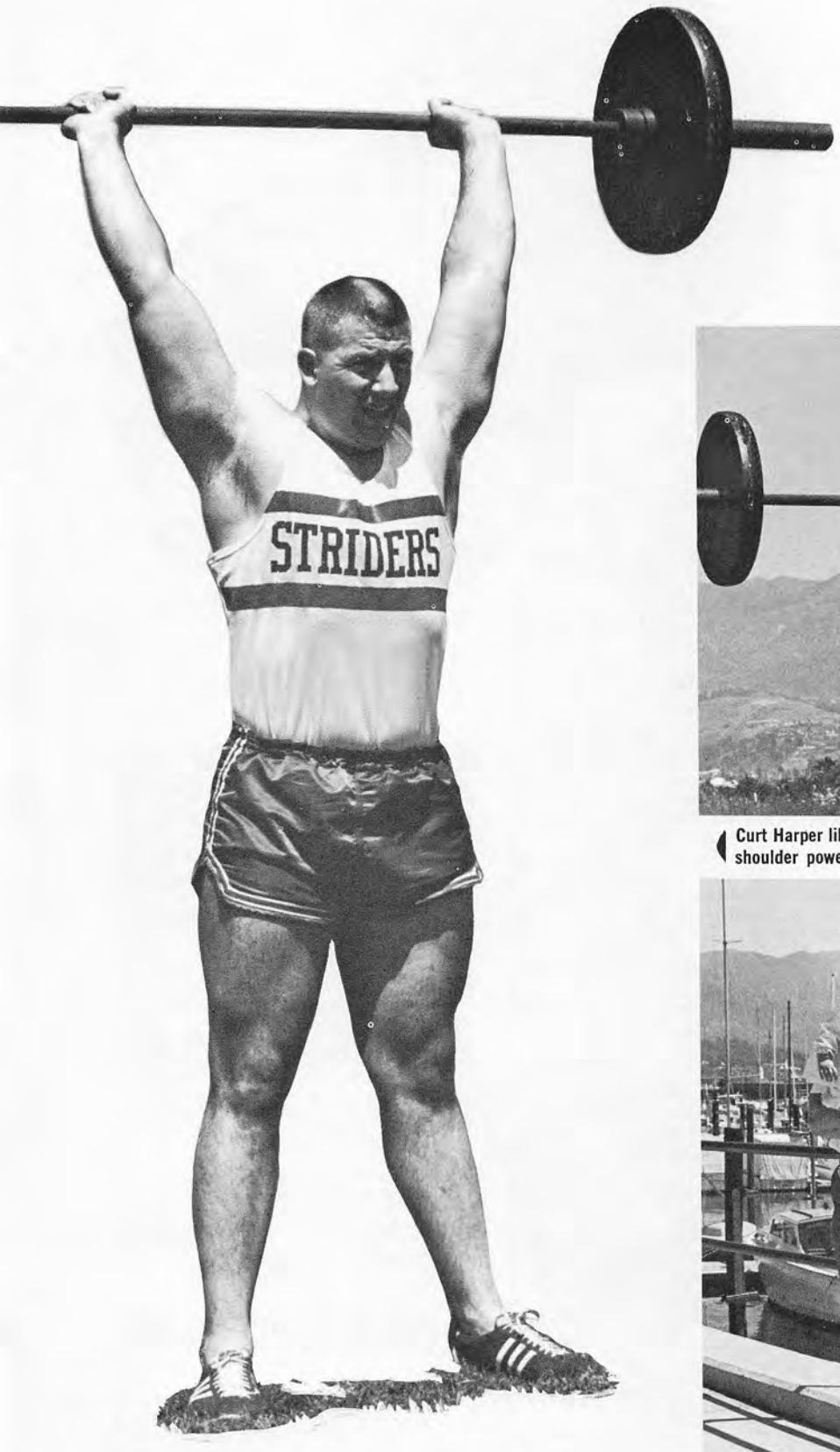
Bent-arm Lateral Raises with dumbbells are especially helpful for discus throwers.



Leg Curls against resistance provide balanced leg strength needed by all athletes.

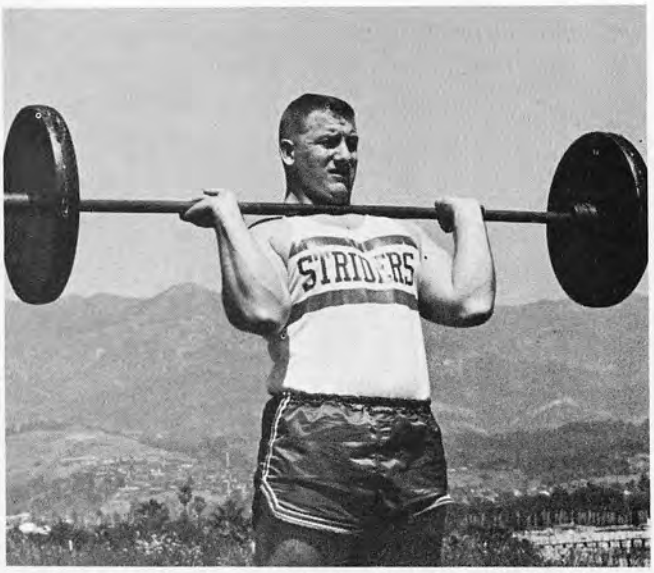
After completing high school, Curt entered Northern Michigan University where his track and field exploits helped bring fame to the athletic department. It was at Northern Michigan that Curt discovered the advantages to be gained by training with weights.

Although Curt began weight training as a strength-building supplement to his training, it wasn't long before he gained a reputation as a strongman's strongman, winning weight lifting contests as well as the shot and discus events. Still relatively small for a topnotch weightman at 6′ 2″ and only 190 pounds, Curt made up for a lack of beef with his explosive power.

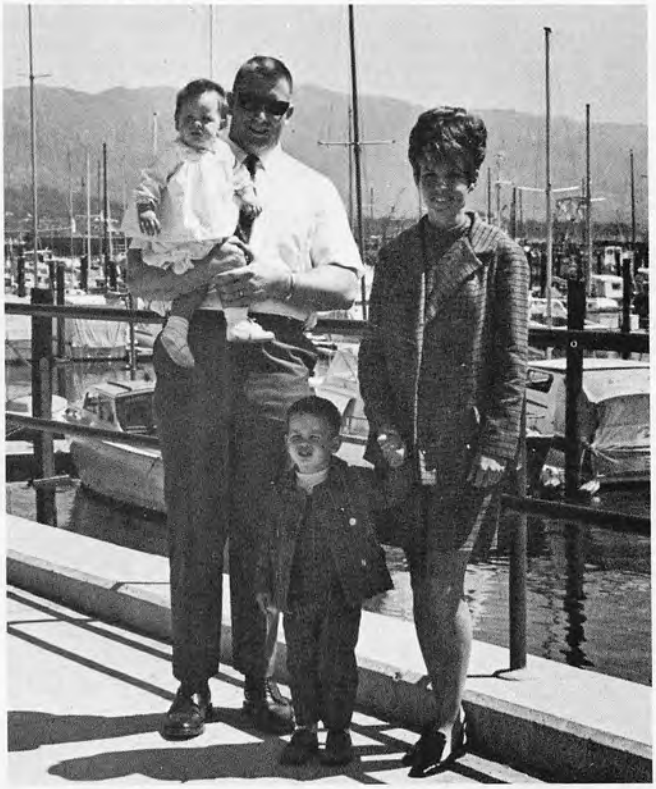


To give some indication of Curt Harper's speed, he was clocked in 10.2 seconds for the 100-yard dash in one of Northern Michigan's meets. During the indoor season he also gave a good account of himself in the 60-yard low hurdles.

Curt closed his collegiate (Continued on page 76)



Curt Harper likes the regular Overhead Barbell Press for developing shoulder power.



A happy family man, discus ace Curt Harper is shown in an informal family portrait with wife Judy and their two children. (Photos by Art Zeller)

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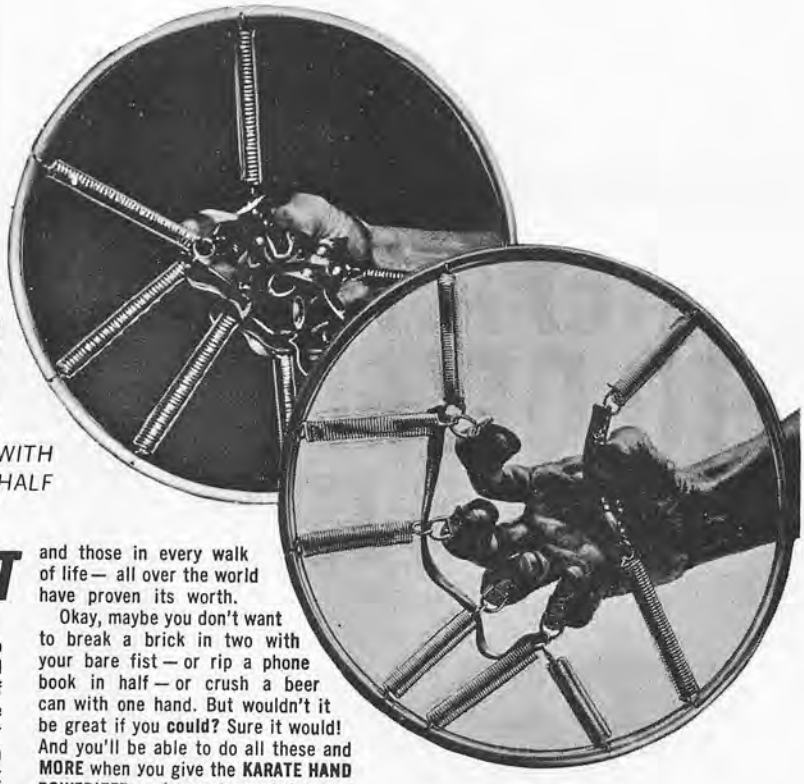

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EXPLOSIVE MUSCULAR POWER FOR DECATHLON PERFORMERS

(Continued from page 22)

400 meters, and the long jump though speed training and interval running, and better running and jumping surfaces have contributed equally, if not more, toward this improvement.

Weight training has contributed somewhat toward increased jumping ability for the high jump, particularly in those athletes whose pre-decathlon speciality was not this event. It has contributed significantly toward improvement in the discus throw due to practice of the Bench Press, which develops the pectoral muscles of the chest and the anterior deltoid muscles of the shoulder, prime movers in forward movements of the throwing arm.

The average increase of one meter in the pole vault since 1955 is due more to the use of the fiber glass pole than any other factor. The introduction and use of the Held javelin during the mid 50's has been the main factor for the large increase in the average distance the javelin has been thrown during the past ten years.

Weight training has not contributed significantly to improvement in the shot put and javelin and only to a limited degree in the discus throw. This is due to overemphasis on development of general and specific body strength in the vertical plane and failure to develop a comparable level of strength in muscles primarily involved in rotational movements of the body. Rotational body strength is of extreme importance to the throwers and more so for the decathlon performer as he must sacrifice size and weight in the larger extensor muscles of the thighs and hips in order to retain speed for the running and jumping events.

Considering the high level of speed, general muscular endurance, and body strength possessed by the decathlon performer, why are the average 1500 meters scores relatively low as compared to scores in the other events?

The writer believes it is *partially* due to an accumulated state of fatigue in the hip flexors (ilio-psoas and rectus femoris) stemming from a *lack of great strength* in these muscles. They are the *prime mover* muscles involved in raising one or both legs, in a bent or extended position, upward toward the trunk in running and jumping events, in the javelin run-up and the forward rotation of the discus thrower across the circle. With the exception of the lower leg muscles, they are the only muscular group used with maximum effort in every event of the decathlon outside the shot put.

Morehouse and Miller [5] maintain that the strength of prime mover muscles is a limiting factor in endurance. In explaining this concept they point out that when a *strong* muscle is involved in lifting a comparatively light load, relatively few muscle fibers must be used for this purpose. As these fibers tire, their threshold of irritability is raised and they will not respond to stimuli. The stimuli arouse fresh fibers which take over the load while the fatigued fibers recuperate. After recuperation they are able to resume the burden, if required.

With the exception of a pre-decathlon high jump specialist it is doubtful whether decathletes give any special attention to the development of a *high level of strength* in the hip flexors. Bill Toomey [6] told the writer that the practice of the events themselves developed a high level of muscular endurance in these muscles. Further, most decathletes do not believe the practice time spent on improving their 1500 meter times for the small number of points to be gained is worth the effort as compared to a much greater gain of points that result from practice time spent in improving their performance in the other events.

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We conclude this portion of our discussion with Geoffrey Dyson's [7] comment of the importance of strength development for runners. He writes, "In the endurance events an athlete will often tire 'locally' (eig. in the back, legs, and arms in distance running) long before maximum demands have been made upon his heart and lungs."

In establishing a strength development program for integration into an overall training regimen for the decathlon, we must insure that:

1) optimum strength is developed in *all* of the prime mover muscles involved in the various movements; 2) not overlook strength development of the antagonistic muscles. Balance in muscular development prevents "muscle boundness," allows the athlete to make full use of the "stretch reflex" principle and assists in injury prevention; 3) muscles and ligaments surrounding vulnerable body joints (ankles, knees, hips, back, shoulders, elbows, wrists, and fingers) are strengthened to prevent injury; 4) in seeking an optimum level of strength increased muscular size, unless indicated for an underweight athlete, is kept at a *minimum*, particularly as to the *lower* body; 5) much greater emphasis is placed on development of strength in the *lateral* and *rotator* muscles of the trunk; 6) emphasis is placed on the development of explosive power (speed and strength) for total body movement and muscular endurance in specific localized muscles subject to fatigue in any one event; 7) the energy level of the athlete is not lowered to a level that will interfere with development of the various skills and cardio-respiratory endurance.

MUSCULAR ANALYSIS

What are the "prime mover" muscles involved in the various movement patterns of the decathlon events? For the purpose of our discussion we can divide the ten events into three basic groups; running, throwing, and jumping. Each group has muscular requirements common to all others of that group and one or more events of each group has specific requirements applicable to itself alone.

1. *The Runs.* Authorities are in general agreement that the following movement characteristics are essential to sprinting: a) high knee lift; b) good leg thrust; c) great bounce or spring in the ankle and toes; d) vigorous arm action; e) good leg speed; and f) long length of stride. With the added requirement of muscular endurance, these characteristics also apply to the 400 meter run.

High knee action is derived from contraction of the *hip flexors.* Strong abdominal muscles raise the anterior edge of the pelvis, providing a greater angle of pull for the hip flexors. Powerful leg thrust is provided by the extensors of the hip (buttocks and hamstrings) and the knee (quadriceps). Bounce and spring

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in the ankle and toes is due to flexion of the rear calf muscles. The flexor hallucis longus, which flexes the big toe, assists in plantar flexion and gives the "push off" in running and jumping. Vigorous arm action depends on a *balanced* development of the shoulder girdle muscles.

The technique of hurdle clearance must be made to conform as nearly as possible to the running action of the sprinter. In hurdle clearance, the trail leg is raised to a position almost at a right angle to the body which requires complete *abduction* of the thigh at the hip joint. The gluteus medius (outer buttock) is the prime mover muscle in this action. Fast pull of the trail leg to the front is due to action of the hip flexors and *adductor* musiles of the thigh.

The 1500 meter run as an endurance event calls for a lower knee lift and a shorter stride. However, a greater level of strength and localized muscular endurance in the hip flexors could contribute to a higher knee lift and longer stride during the finishing kick, when an increase in running speed might be required.

2. *The Throws.* The back, hip, and knee extensor muscles and the flexor muscles of the ankle and toes are "prime movers" in the upward delivery action of the shot and discus and the final thrust action of the javelin. Traditional weight training programs used by athletes take adequate care of strength development in these muscle areas.

Extremely strong fingers and wrists are absolute necessity for the thrower. In respect to the shot, Doherty [8] comments that a major weakness and limitation of most shot-putters lies in the wrist and fingers. Lockwood [9] has commented that the faster the spin which is imparted to the discus, the greater the gyroscopic effect that is produced, resulting in greater stability of the discus in flight. He states, "It is doubtful if throwers give sufficient attention to this. It would seem to be possible to increase the power of the finger action by 'cocking' the wrist at the beginning of the throwing action and then snapping it forward as the discus is launched." The importance of the finger and wrist action at javelin release is pointed out by Doherty [10] who writes, "All the accumulated power must be controlled and even augmented by the fingers. Near the end of his career, Cantello found that all his efforts at strength training were of little use unless the power in his fingers was of an even greater measure."

Horizontal shoulder flexion common to all three events in the delivery action of the arm is due to contraction of the anterior deltoid and pectoral muscle. It goes without saying that modern day weight training places more than enough emphasis on development of great strength in these two muscles along with strength development of the elbow extensors (triceps) which are used in shot put and javelin delivery.

In respect to the javelin throw, due to the "flail-like" action of the throwing arm and the supinated position of the hand, actual extension of the lower arm in the throwing action begins with contraction of the long wrist flexors, whose point of origin is at the medial epicondule (inner side) of the elbow. The wrist flexors assist the elbow extensors in beginning the final whip-like extension of the arm.

This overemphasis on strength development of the pectoral and anterior deltoid leads to an unbalanced development which in many cases prevents the athlete from making the most effective

use of the "stretch reflex" principle and the mechanical principles related to the event. This is particularly true in the discus and javelin throws.

Maximum velocity at discus release not only depends on the magnitude of the total forces acting on the discus, but also on the length of time during which the forces are maintained. Cochran [11] states, "All your power comes from the long drag. Many discus throwers have a short drag. When they start to spin, this right arm keeps creeping up until the arc they are going to pull through is very short. If I could get my arm clear back behind me, that means three feet and three feet in the circle means a lot more distance." Cleaver [12] writes, "The further the discus is behind the thrower at the moment of starting his turn, the greater will be the number of degrees through which he can apply his muscular forces to the discus."

What muscular action is most effective in assisting the thrower to attain the "long drag" and counteract the tremendous centrifugal force developed by the body in its forward rotational movement across the ring?

The shoulder girdle is composed of two pairs of bones, a clavicle and a scapula. Most movements of the scapula are closely integrated with movements of the arm. The scapula acts as a mobile base when the arm of the discus thrower, by action of the posterior deltoid and upper arm extensors, is raised to the rear at the start of the spin. When the discus arm is held in a static position, to maintain a position of "long drag" during the spin, there must be a stabilization of the shoulder girdle in order to support it. Scapula stabilization is provided by the scapula adductors (rhomboids and trapezius primarily).

Powerful muscles in the scapula area of the shoulder girdle also counteract the tremendous pull of the horizontal shoulder flexors (pectoral and anterior deltoid) making it easier for the athlete to relax and stretch the shoulder flexors, thereby taking advantage of "stretch reflex" action in the forward movement of the arm at the time of delivery. This latter comment applies equally well to the withdrawal and delivery phases of the javelin throw.

As stated above, all movements of the scapula are closely integrated with movements of the arm. One of the prime mover muscles whose action contributes greatly to the total force generated by shoulder and arm action in pushing (shot put) or throwing (javelin) movements is the serratus anterior. It abducts and pulls the scapula forward.

If the decathlete is encountering difficulties in application of basic technique in the shot put, is it due to a lack of speed, coordination, timing, practice, or is it due to a lack of strength in those areas involved in a specific phase of the over-all shot put movement? This point is of particular significance when we read the comments by athletes and coaches concerning the problems encountered in application of the O'Brien technique.

Dallas Long [13] states, "Something I had particular trouble with was getting my leg underneath me. I had a tendency to drag my right leg behind late, and I am not the only one. But by far the majority of shot putters will do this." O'Brien [14] himself comments that the most common mistake in the use of his style is not getting the right foot and leg under the major portion of the body when moving across the circle. Doherty [8] writes that one of the most difficult portions of the O'Brien style lies in pulling the right leg forcefully from the back of the circle to its correct position in the

center of the circle under the body weight.

This problem could be due to a lack of reasonable level of strength in the hamstring mustcles which are "prime movers" in knee flexion. Strength in the hamstring muscles which are "prime ery of the extended right leg so that it will be in a correct position under the body when the athlete arrives at the center of the circle. A quick recovery helps eliminate the "hesitation" in the center of the ring, which, if it occurs, offsets the body momentum gained by the athlete in his glide from the rear of the circle.

Due to the emphasis placed on development of strength in the vertical plane in traditional weight training programs for athletes, *little attention has been given to development of a comparable level of strength in the prime mover muscles involved in horizontal rotational movements of the body.*

Malcolm[15] points out that very few movements in athletics are linear movements. They are mainly rotational, whether it be a part or the whole of the body. Graham Adamson[16] has written, "There is not sufficient data available concerning strength records in the horizontal plane, i.e., strength associated with the horizontal rotation so common in athletics and, indeed, in many sports, but of *greatest importance to the throwers.*"

Each one of the throws requires a maximum application of "body torque" in the delivery action. Body torque depends almost entirely on the strength of the lateral flexor and rotator muscles of the upper and lower back, sides, and abdomen. These muscles (erector spinae, multifidus, rotatores, external and internal obliques) are the prime movers in the *horizontal rotational* movements involved in the application of body torque to all throwing movements. Too often, coaches and athletes overly concerned with strength development in the vertical plane overlook the advantages to be gained from developing great strength in these muscle areas.

3. *The Jumps.* Powerful leg thrust for the run-up or approach and explosive take-off in all three events is provided by the extensors of the hip and knee working in conjunction with the flexor muscles of the ankle and foot. The greater the power of these muscles in complete extension of the leg, the greater is the acceleration of the runner and the greater is the vertical height attained by the broad and high jumper. Doherty[17] in his discussion on the importance of momentum in the high jump writes, "The faster a man runs and the more powerful his related leg muscles, the more he can compress the body springs at take-off and the higher he must jump into the air." Ganslen[18] in his study of pole vaulters found that 68% of those tested used an explosive springing take-off and by this mechanism thereby increased their vertical take-off velocity one to three feet per second.

The extension force of the take-off leg is accentuated and assisted in all three events by the vigorous lift of the lead leg due to contraction of the prime mover hip flexors. At this point I would like to re-emphasize the importance of developing great strength in the hip flexors if the decathlete hopes to make the most effective use of his skills in the three jumping events.

Authorities maintain the most difficult aspect of broad jumping technique to learn is keeping the feet high before landing. Theoretically, it has been estimated that for every inch the heels are kept up, a jumper will gain 1½ inches in over-all distance.[19] This requires strong hip flexors, assisted by strong abdominal muscles which contract to lift the anterior rim of the pelvis, causing the contraction force of the hip flexors, whose tendons pass over the anterior rim, to be applied more nearly at a right angle.

With use of the flexible pole in the vault there is a longer swing requiring a much quicker swing-up. Combined with a rock-back of the head and shoulders the swing-up necessitates an explosive elevation of the hips and legs to a level where the hips are as high as or preferably higher than the shoulders before the beginning of the pull. In analyzing Aubrey Dooley's form in the pole vault Ganslen[18] mentions the unusually strong hip flexors possessed by Dooley enabling him to make the best use of the swing-up and the pull that followed. Doherty[8], in his discussion on the problem of using the bent or straight lift leg style in the high jump, comments that the Russians with strength training of the leg lifting (hip flexor) muscles achieved the velocity of the bent knee style and the power effects of the straight leg style of the orthodox straddle.

The forward and upward elevation of the arms in the broad and high jump assists the upward body momentum at the take-off. It has been estimated that only about two-thirds of the high jumper's lift comes from the take-off leg drive and the remaining one-third from the free leg and arm swing. The prime mover muscles in this action are the anterior deltoid and upper trapezius.

For the majority of straddle-style high jumpers the trail leg is the most difficult part of the body to get over the cross bar. Doherty[8] states it is a unique action which is not duplicated in other sports events. It requires great strength in the side buttock (gluteus medius and minimus) which abduct the thigh outward and in the peroneus lanzus of the ankle which everts the foot outward.

The pull-up in the pole vault is a violent explosive action of the arm (biceps) and shoulder flexors. It is my opinion that the pull-up has, in reality, been more of a one-arm chin by the upper arm, than an equal pull by both arms as recommended by authorities. This is due to a lack of strength in the left shoulder girdle *adductor* muscles causing a loss of speed and effectiveness in the pull.

In the pull-up the upper arm moves forward and inward which activates the powerful pectoral muscle of the right chest area and the anterior deltoid of the right shoulder, "prime movers" in this movement. On the other hand, the elbow of the lower arm moves sidewards and away from the body (abduction) as the latter naturally turns in its upward motion, with strong *adduction* and partial rotation downward of the scapula due to vigorous contraction of the posterior deltoid, teres major, supraspinatus, latissimus dorsi, rhomboids, and the middle and lower portions of the trapezius. These muscles stabilize the left scapula and provide a strong base for the pulling action of the lower arm. Due to the outward movement of the elbow the lower shoulder joint receives no assistance from the anterior deltoid or pectoral muscle in flexing. The abducted position of the lower arm in the phase of the turn that blends into the push-offs places a terrific burden on the elbow extensors (triceps) to maintain the upward momentum of the body.

With greater emphasis on strength at the critical point in the pull and turn of the vault, more attention should be given to development of a higher level of strength and flexibility in the lateral trunk flexors and deep seated spinal rotators. Prevention of injury is another reason. Rasch and Burke [20] comment that back injuries are particularly common in sports such as pole vaulting, in which strong rotational movements of the back are frequent.

In the push-off phase of the pole vault Ganslen [18] maintains that with the flexible pole, the *upper arm* must carry the full burden of body delivery because the bottom hand is low on the pole due to the wider hand space. It should be noted that in the latter phase of the turn, the lower arm is actually starting to extend. If the strength of the *lower arm* elbow extensors (triceps and anconeus) are developed to a high level it would increase the upward momentum of the body and assist the upper arm in a more explosive push-off.

MUSCULAR ENDURANCE

Because muscular endurance is a necessary component of a high caliber decathlon performance and has a definite relationship to body strength, it would be well at this time to discuss what is meant by the term and what type of training is recommended for use by an athlete to develop this quality.

Sedgwick [21] defines muscular endurance as "the quality which enables muscles to maintain contractions or a contraction in conditions of fatigue, or the ability to continue work and postpone and tolerate fatigue." This type of endurance as differentiated from general (basic) endurance is highly specific by nature and directly related to the muscle groups used by the decathlete in the practice and performance of the various events.

Physiologists, sports medicine authorities and physical education research technicians maintain that an increased localized muscular endurance is related to and dependent on (a) increased muscular strength; (b) increased capillarization of the muscles; (c) biochemical changes in the muscles; and (d) efficiency of the circulo-respiratory system. Massey, *et al.*[22] point out that increased muscular endurance results from increased strength of the muscles. Clarke [23] who has made extensive research studies in this field lists eight relationships between muscular strength and endurance, commenting that muscles with the greatest strength have the greatest endurance. Steinhaus [24] states that all endurance depends on circulation though muscular endurance is also related to strength. Roskamn, *et al.*[25]

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maintain that increased capillarization and biochemical changes in the muscles due to training are the prime requisites for increased muscular endurance.

The relationship between strength and muscular endurance can be seen in the exploits of old time strong men and stage performers of the late 19th and early 20th centuries. Joe Lambert at 45 years of age and weighing under 150 lbs., in 42 performances within a 16-hour period in 98-degree heat, lifted a total of 89,237 lbs. off the ground of which 67,732 lbs. were lifted overhead. Poundages and repetitions used at the end of the performance were the same as those used at the beginning. Oscar Matthes, a 4' 11" miniature Sandow pressed overhead with two hands 76 lbs. for 30 repetitions, 65 lbs. for 42 repetitions, 50 lbs. for 63 repetitions, a 6-lb. dumbbell with one hand for 1000 repetitions in 10 minutes, chinned 54 times, and dipped 65 times on the parallel bars.

Other performances by strong men of that era included: a) 75 lbs. pressed overhead with two hands for 845 repetitions followed by 1505 deep knee bends; b) 85 lbs. pressed overhead with two hands for 720 repetitions in 30 minutes followed by 1450 deep knee bends in one hour; c) a 71½-lb. dumbbell pressed overhead with one hand for 118 repetitions; d) a 50½-lb. dumbbell raised from the floor to an overhead position for 7,600 repetitions in one hour and thirty minutes; d) a 25-lb. dumbbell pressed overhead with one hand for 450 repetitions.

These strong men did not concern themselves with the development of cardio-respiratory efficiency or train regularly to increase their muscular endurance capabilities. Most of their training was concerned with the development of strength through participation in strength contests in the gymnasium and performances on the stage or in the circus arena.

How is the quality of muscular endurance developed? Roskamn, *et al.*[25] write, "Local muscular stamina will best be improved through very numerous repetitions of contractions with submaximum effort and in a form simulating competitive conditions." Cureton[26] comments that muscular endurance is developed through repetitious effort in the 20-30% of maximal range carried on for some time. Peterson, *et al.*[25] showed that increases in muscular endurance are closely related to the number of *daily* stimuli. During a six-week period dynamic muscular effort was increased seven and eight fold when isotonic repetitions were set at 50 per day with 60% of maximum load. In conclusion we can state that muscular endurance can be developed with numerous repetitions of a submaximal load. Experience of the old time strong man however, points out that the stimuli for the development of muscular endurance does not have to be applied on a *daily* basis.

PROGRAM FUNDAMENTALS

1. Constant *progressive overload* is required for strength increase. Whatever weight the athlete uses, he must strain to complete the final repetition of the set. When the final rep can be done without strain for four workouts the suggested weight increases set out in the schedules should be added.

2. Tension is the basic stimulus for pure strength development. The athlete must exert maximum tension throughout the entire range of motion in order to develop the strength of the entire muscle. The movement should be carried out in a smooth and even manner and at a moderate rate of speed. The full normal range of motion should be utilized in performing the exercise. This means complete flexion and extension of the muscle. The complete stretch through a full range of movement develops strength in all areas of the muscle and eliminates the possibility of any permanent shortening of the muscle which could result from habitually performing an exercise over a limited range of motion.

3. Generally inhale with the effort of lifting and exhale while returning the weight to the original starting position. In repetitive explosive type exercises involving speed of movement, it is difficult to regulate the breathing. Just remember not to hold the breath for a prolonged period of time.

4. Allow two-minute rest periods between sets of arm, shoulder and abdominal exercises; three-minute rest periods between sets of leg and back exercises.

5. The principle of "specificity" applies to strength, explosive power, or muscular endurance development. In adhering to this principle the athlete will employ the factors of load (weight used), rate (speed of exercise) and duration (repetitions). Strength is developed by use of near maximum weights with few repetitions (2 to 6). To develop explosive power reduce the weight to the 20 to 40% level of maximum and perform the exercise at a rate of speed approximating the speed level used in the event. Increasing the level of explosive power requires the progressive increase of the load used at regular intervals and repetitions in the range of 10 to 15. To develop muscular endurance reduce the load to the 10 to 20% level of maximum and increase the repetitions in the range of 25 to 40.

6. Increase in repetitions for explosive power development would be one repetition every 3rd workout session; for muscular endurance one repetition every workout session.

7. Strength development schedules should not be engaged in before skill training.

8. The level of strength or explosive power attained by the start of the ten-event competitive season should be maintained at that level and no attempt made to further increase the poundages used on the various exercises. This level can be maintained with one workout per week. Exercises for the fingers, hands, and wrists can be done two or three times per week during the competitive season except when the decathlete is participating in throwing events when only one season is required. In respect to muscular endurance, participation in the various events will maintain the level obtained at the beginning of the competitive season.

9. Exercises for the hands and fingers can easily be isolated from general body movements. They require little expenditure of energy. Among those available are: (a) squeezing rubber balls or grips; (b) hanging by finger grip from an overhead 2 x 4; (c) alternately dropping a heavy dumbbell or barbell plate from one hand and catching with the other hand; (d) finger press-outs against a wall; (e) floor dips on fingertips; (f) crumpling a sheet of newspaper into a small ball with fingers of one hand.

SCHEDULE INTEGRATION

A high quality of overall muscular strength cannot be attained in a few months. It takes several years to acquire the type of strength in the muscles that will stay with an athlete during periods of inactivity or when he is concentrating on the development of other physical attributes. In this respect the decathlete has an advantage. Championship performance in the decathlon demands several years of dedication and hard work to acquire a high degree of proficiency in the various skills. He therefore does not have to rush his overall strength development program. A more gradual approach to strength development provides an additional advantage as pointed out by Paish[27] who states, "An increase in strength will almost certainly mean a slight modification to the existing style to accommodate it. If strength is developed considerably, we could arrive at the point where a complete re-education of skill is necessary. Therefore, strength, mobility and technique must be brought along

hand in glove, so that only slight modifications to style are required."

The decathlete should begin his strength training with an all-around program as set out below. As he progresses during the first two years he may find during the second year that his level of strength development in certain areas of the body has improved immeasurably over other areas. He may find that lack of skill improvement in a specific event is due more to a lack of strength in certain muscular areas of the body required for the event than to an absence of skill. He can discontinue the overall program for a period of six to eight weeks and concentrate on the specific body areas requiring improvement.

Generally a strength improvement program for an athlete is suggested on the basis of pre-competitive and competitive seasons. The competitive season for the decathlon performer covers a total period of four months involving three or four ten-event performances. His participation in one or two specific competitive events each week during indoor and outdoor track seasons would be classed as a part of his training regimen. Based on the length of the competitive season this would allow eight months each year to improve the level of strength in all the muscles used by him in the various events.

The writer has stressed the importance of developing explosive power and muscular endurance. The suggestions offered below take this into consideration. The decathlete each year will progress from pure strength development towards the development of power and muscular endurance as he approaches the decathlon competitive season.

During the pre-competitive season workout three times per week, alternating the schedules (No. 1, Monday; No. 2, Wednesday; No. 1, Friday; No. 2, Monday, etc.) for five months. At the start of the six month begin explosive power and muscular endurance training, (Program Fundamentals No. 5). (Perform No. 1 strength schedule Monday; No. 1 explosive power and muscular endurance schedules Wednesday; No. 2 strength schedule Friday, etc.) He should keep increasing weights on the strength schedules for three months until the beginning of the competitive season. During the latter season do not increase weights on the strength schedules. On the day he performs the explosive power and muscular endurance schedules he would perform two sets of explosive power movements for all of the exercises in the schedules first, followed by one set of muscular endurance movements. The *exception would be the bouncing Split Squat (1 set only) as it is a combination exercise.*

During the competitive season he can discontinue the total strength development program if he desires and concentrate only on those body areas requiring specific improvement supplemented by the explosive power and muscular endurance schedules.

Schedule I

Exercise	*Sets*	*Repetitions*	*Suggested Weight Increase*
1. Incline Bench Press	3	6	5 lbs.
2. Bent Over Lateral Raise	3	6	5 lbs.
3. One-Third Squat	3	6	10 lbs.
4. Bent Arm Pullover	3	6	5 lbs.
5. Twisting Sit-Up	3	6 (each side)	5 lbs.
6. Bend Over Twist	3	6 (each side)	5 lbs.
7. Heels Raise	3	6	10 lbs.
8. Leg Raise from Bar	3	6	5 lbs.
9. Wrist Curls	3	10 (front and back)	2½ lbs.
10. Leg Extension	3	6	5 lbs.
11. Shoulder Push	3	10	10 lbs.
12. Wrist Rotations	3	6 (each way)	2½ lbs.

Schedule II

Exercise	*Sets*	*Repetitions*	*Suggested Weight Increase*
1. Incline Bench Lateral Raise	3	6	5 lbs.
2. Triceps Extension	3	6	2½ lbs.
3. Leg Curls	1	10	5 lbs.
4. Straight Legged Deadlift	2	10	5 lbs.
5. Pole or Rope Chin	3	6	5 lbs.
6. Bent Knee Leg Raise	3	6	2½ lbs.
7. Forward and Lateral Raise	3	12 (6 fwd., 6 lateral)	5 lbs.
8. Standing Leg Raise	3	6	5 lbs.
9. Forearm Pull	3	6	2½ lbs.
10. Bouncing Split Squat	1	20 (10 ea. Leg fwd.)	5 lbs.
11. Wrist Extensions	3	12 (6 front, 6 back)	2½ lbs.
12. Standing Side Leg Raise	3	6	2½ lbs.

EXERCISE DESCRIPTIONS

Note: Muscles strengthened by exercise for a specific event(s) set out in parenthesis.

Incline Bench Press. (Throws) Lie on bench 75° to 80° angle. Hands spaced on barbell slightly wider than shoulder width apart. Press weight to arms' length overhead until arms are locked. On occasions press weight with hands spaced six to eight inches apart with elbows out to the sides at right angles with the shoulders.

Bent Over Lateral Raise. (Throws and Pole Vault) Body bent at hips, 90° angle, knees slightly bent, arms hanging down toward floor, holding dumbbells off floor, palms of hands facing each other. With arms slightly bent at elbows, raise bells to side as high as possible without any swinging movement. As bells reach their greatest height try to force shoulder blades together. Return to starting position.

One Third Squat. (Runs, Jumps, Throws) Barbell on shoulders, feet 16″ to 18″ apart, toes pointing slightly outward. Lower body to a position where thighs are at an angle of 10 to 12 inches above being parallel to the floor. Return to erect position.

Bent Arm Pullover. (Javelin) Lie face upwards on flat bench, holding barbell overhead, hands spaced 12 to 14 inches apart, elbows wider than hands, palms facing towards feet. With elbows *slightly* bent and maintained in that position throughout the movement lower weight backward and downward behind head toward the floor until arms are parallel or slightly lower than level of bench. Return to starting position.

Twisting Sit-Up. (Throws, High Jump, Pole Vault) Lie on floor, heels spread about 18 inches apart, knees slightly bent, barbell *loaded on right side only*, held behind neck. Curl trunk forward with chin touching chest. As you come erect, make a concerted effort to touch right elbow to left knee. Lower body to floor. After completing repetitions for right side, switch *loaded end* of barbell to left side and repeat required repetitions.

Bend Over Twist. (Throws, High Jump, Pole Vault). Stand erect, feet 24

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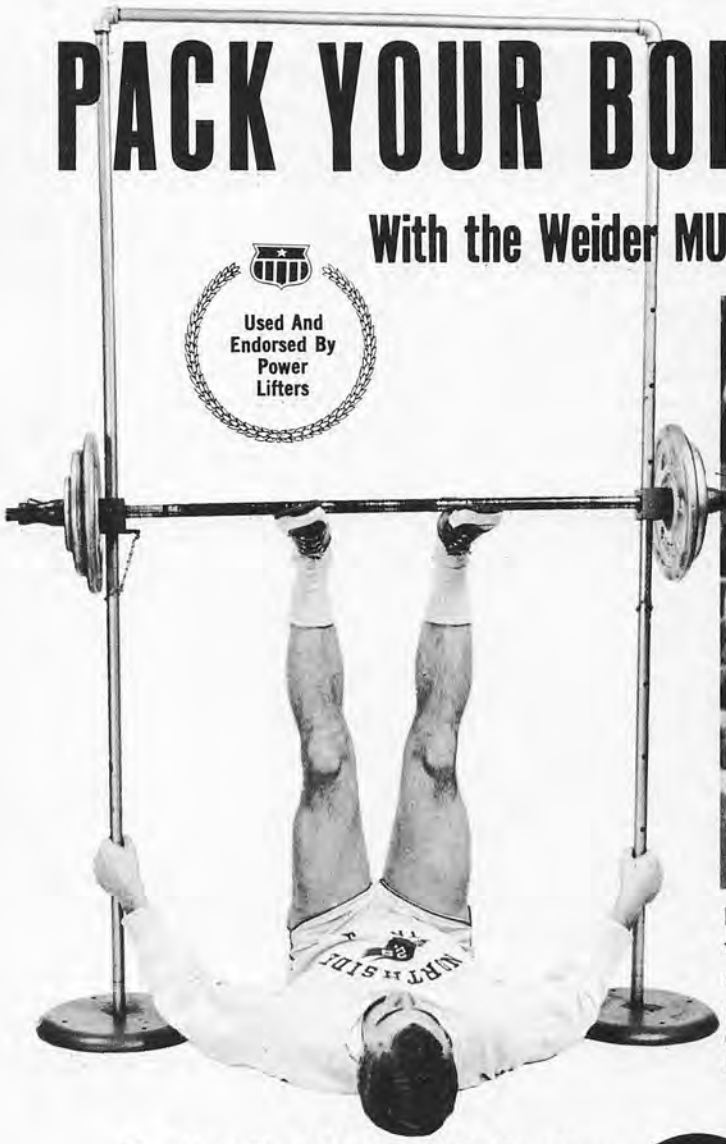

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inches apart, knees locked, barbell on shoulders *with right end only loaded*, arms extended over bar with hands close to collars. Bend forward at waist, twisting body and lowering the *loaded end* of the barbell until the lower end touches the floor midway between the feet. As you come erect, pull the loaded end of the barbell to the rear requiring the body to twist slightly to the right. When you complete the required repetitions from one side, switch loaded barbell end to other side and repeat.

Heels Raise. (Runs, Jumps, Throws) Stand erect, barbell on shoulders, toes and balls of feet on a 2 x 4 block, feet 14 to 16 inches apart. Alternate position of feet with each set, (toes pointed inwards, straight ahead and outwards). Raise body as high as possible on toes holding top position one or two seconds and then lower heels as far as possible to stretch calf muscles. High jumpers should perform a takeoff leg heel raise holding a heavy dumbbell on the same side of body as the takeoff leg.

Leg Raise From Bar. (Jumps) Hang by hands from horizontal bar with iron boots on feet. With knees slightly flexed raise legs to a horizontal position or slightly higher and hold for count of one. Lower legs and repeat. Do not bend or flex arms at any time.

Wrist Curls. (Throws) Kneel with forearms across bench, or sit with forearms on thighs, barbell held in hands, palms upward. Lower weight as far as possible, then curl weight upward as high as possible by *action of wrists only*. Keep forearms in contact with bench or thighs at all times. Repeat movement with palms facing downward.

Leg Extensions. (Hurdles, Broad Jump) Sit on bench with legs hanging down, iron boots attached to feet. Raise weight until legs are completely extended forward with knees in a locked position. Do not swing weight upward with body momentum.

Shoulder Push. (Throwers) Use weight 40 to 60 lbs. heavier than maximum Bench Press. Lie face up on flat bench, weight in hands, shoulder width apart, arms extended above face with *elbows locked.* Push weight upwards with upward motion of shoulders *only*. Weight will only move two to four inches. As shoulders come down relax them completely but do not bend elbows. This exercise develops the serratus anterior muscles that pull the scapula forward in all throwing movements.

Wrist Rotations. (Javelin) Kneel with forearm across bench or sit with forearm on thigh, wrist and hand extending over edge of bench or ksee. Hold a dumbbell bar at lower end in a thumbs up position and the upper end loaded. Rotate wrist to right as far as possible. Then raise weight to the left and continue past the vertical position to the left as far as possible. Keep rotating weight at a moderate pace for required repetitions.

Incline Bench Lateral Raise. (Throws) Lie face upward on inclined bench. Dumbbells held in hands, palms facing each other, arms extended above chest. With slightly bent elbows lower bells as far as possible out to the sides. Return bells to position over chest until they touch each other.

Triceps Extension. (Shotput, Javelin, Pole Vault) Seated on bench or standing, holding a barbell overhead, hands 12 inches apart, palms facing forward. Keeping *elbows in a fixed position* bend arms at elbow and lower weight downward behind neck until hands touch back of neck or shoulders. Return weight to overhead position but do not let elbows move forward in doing so.

Leg Curl. (Jumps, Runs, Shotput) Iron boots on barbell handle or separate iron boots can be used. Lie face down on bench with legs extended. Raise lower legs until heels touch buttocks.

Straight Legged Deadlift. (Runs, Jumps, Throws) Stand on bench holding weight, with hands spaced shoulder width apart, downward in front of body. Bend forward from hips and lower weight, with arms straight and *knees locked*, to the ankles. On coming erect thrust chest outward and shrug shoulders upward. Never exceed more than 90% of bodyweight in this exercise.

Pole or Rope Chin (Pole Vault) Use same hand spacing as in the vault, iron boots on feet. Arms completely extended, head thrown back. Hips and knees can be slightly flexed, but do not raise legs when pulling up. Pull up as high as possible, trying to flex arms completely. *Reverse Position of hands each set.*

Bent Knee Leg Raise. (Runs, Jumps, Hurdles) Stand on bench, one leg hanging free to which is attached an iron boot. Raise knee to chest, keeping upper body erect. Lower weight until leg is completely extended and repeat.

Forward and Lateral Raise. (Throws, Jumps) Stand erect, dumbbells held at sides, thumbs facing to the front. Raise arms forward, with elbows locked, to slightly higher than shoulder level. Lower bells to sides and then raise arms sidewards, palms down, to above shoulder level. Alternate front and side raises for required number of repetitions.

Standing Leg Raise. (Jumps, Hurdles) Stand on bench, one leg hanging free, with iron boot attached to foot, hand on opposite side placed against

wall or holding pole. Raise leg with iron boot forward as high as possible, keeping knee locked or slightly flexed. Do not swing weight upward by momentum and keep body in erect position.

Forearm Pull. (Javelin) Lie face up at right angles to a flat bench with only upper back on bench, holding barbell, palms up, hands spaced 12 to 14 inches wide. Elbows are extended at right angles to the shoulders with upper arms on bench, elbows bent at a 90° angle holding weight above face. *Keeping upper arms and elbows flat on bench at all times*, lower weight downward and behind head to a *point lower than bench level.* It will be necessary to turn head sideways as the barbell is lowered.

Bouncing Split Squat. (Jumps, Hurdles, Throws) Extremely effective for developing explosive power, flexibility and muscular endurance in hips, groin and legs. It is not necessary to use heavy weights. Stand erect, barbell on shoulders. Leap into air, at same time splitting the legs, one to the front with bent knee, one to the rear with leg nearly straight. Try to get hips as low as possible. Immediately rebound and leap as high as possible, reversing position of legs in mid-air. No hesitation between jumps, but a *continuous motion.* Use a light weight to start with and progress slowly. Never exceed 75 lbs. minimum.

Wrist Extensions. (Discus) Stand erect, holding a dumbbell handle at one end with plates on the other end, loaded end pointing towards floor. Forward extensions would be with loaded end facing to front (thumb side), rear extensions, loaded end facing to rear (little finger). Raise loaded end as high as possible by action of wrist only, keeping the arm straight with the elbow locked.

Standing Side Leg Raise. (Hurdles, High Jump) Stand on bench, one leg hanging free, with iron boot attached to foot, hand on opposite side placed against wall on holding pole. Raise leg with iron boot directly sideward as high as possible, turn the foot on the ankle in an outward direction. Try and keep body in erect position without leaning during exercise.

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"TRAINING TABLE"

(Continued from page 13)

have become nearsighted, there is nothing known to science that will restore your vision to normal. Vitamin A has no affect that I have ever heard of. However, supplements of calcium and vitamin D have made substantial improvements in the vision of nearsighted people in studies made at the New York Eye and Ear Infirmary.

The studies, made by Dr. Arthur A. Knapp, indicated that by giving severely nearsighted patients a daily supplement of 5,000 units of vitamin D (you can get it in capsules) plus 1 gram of calcium every day, the vision could be improved to such an extent that Dr. Knapp even speculated that nearsightedness might be caused by deficiency in these nutrients.

I'd suggest that you try taking bone meal, which is pulverized beef bones supplying not only calcium but also enough phosphorus to help you absorb the calcium. You can get your bone meal in tablets with the dosage on the label that will let you know just how many tablets to take to give yourself 1 gram of calcium. Some bone meal tablets are also prepared with vitamin D already incorporated in them, cutting down on the number of pills you have to swallow in the course of a day.

It is certainly worth trying. While you cannot hope to restore your vision to normal, you might be able to improve it enough to be able to do without glasses comfortably while you are exercising.

Question: While in the military serv-

HE'S RUGGED... ENERGETIC
A NEW BREED OF WILDCAT
he reads...
ALL AMERICAN ATHLETE
The Magazine For Fitness And Athletic Conditioning
THE athlete in action depends on ALL-AMERICAN ATHLETE to bring him valuable scientific information from every corner of the world on exercise, diet, weight control and other subjects important to his athletic development and success. Everything is sifted, edited and condensed by an experienced and capable staff of editors. The athlete in action knows and trusts ALL-AMERICAN ATHLETE because its only purpose is to serve him . . . through editorial presentations . . . through the useful products brought to his attention in advertising pages. ALL-AMERICAN ATHLETE is read by hundreds of thousands of athletes each month. Join them and become a New Breed of Wildcat by SUBSCRIBING TODAY!

ice I caught a shell fragment in the face and had to have a restoration done on my jaw. Most of it worked out well, but having lost all my teeth, I naturally have to wear dentures. And no matter what I do, they seem to rub my gums raw so that they sometimes bleed and always feel sore. My dentist keeps suggesting a new set of plates, but I'm now on my third set and the situation hasn't improved. Is there anything else that you can suggest?

Answer: I'd suggest that you make a habit of taking large amounts of vitamin C every single day, and also a vitamin B-complex supplement, preferably brewer's yeast or desiccated liver.

You need the vitamin C because this is the vitamin that helps you to heal faster and better, and the fact that you have such a problem is a good indication that you are probably not getting enough for this purpose. The individual cells are bound together by connective tissue which is manufactured out of vitamin C in addition to other substances. This specialized tissue cannot be strong and healthy unless there is an adequate amount of vitamin C in your blood. What is more, this vitamin is a natural bactericide that has been shown, at the Pasteur Institute and other first-rate research organizations, to destroy germs as effectively as hydrogen peroxide and other antiseptics you would not want to put in your mouth. The vitamin will not burn or damage your sensitive gum tissues in any way, but it will do them a great deal of good.

Dr. Robert J. Cella, D.D.S., reported to the 1965 annual meeting of the American Dental Association that all the B-complex vitamins are of major importance to people with sore mouths. Their chief healing value is that they are intimately involved in enzyme systems that are needed to metabolize starches and sugars. People with mouth problems like yours obviously have trouble chewing and tend to eat more of the soft foods, such as cereals, which are high in starches and sugars. If you can't digest them properly, this creates a health problem that is reflected in your mouth. Properly digesting and assimilating them will improve your overall health, which will be reflected in the toughness of your gums and their ability to heal and stay well.

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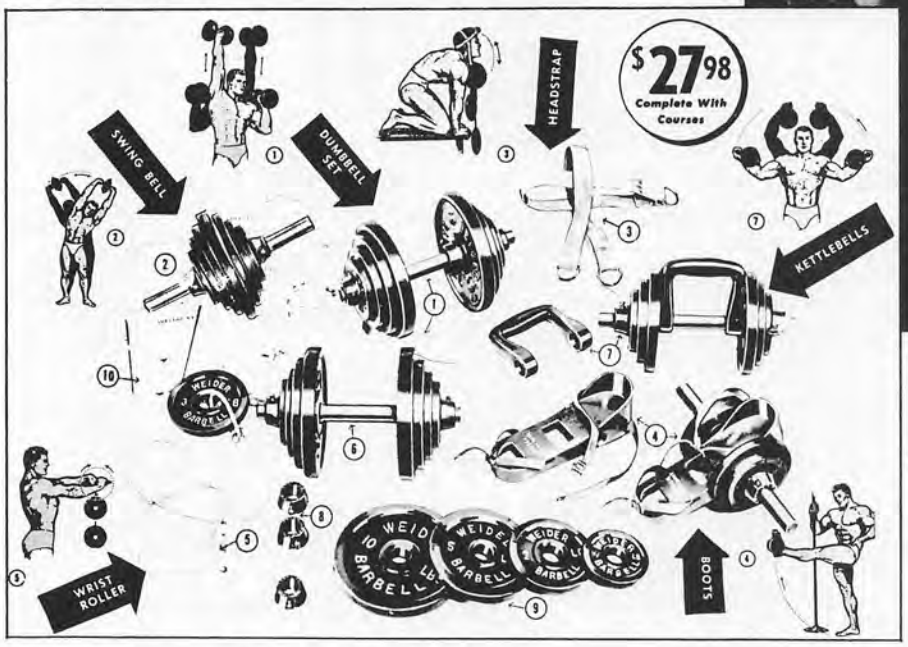
Specially designed for exercising in one room . . . apartment or dormitory. Equipment is arranged so that every muscle can be worked with apparatus taking up less room than three pairs of shoes in a closet. An ideal set for the person working away from his home . . . salesmen . . . students. Complete strength- and fitness-building exercises for every part of the body can be performed with the hand, arm, leg, and neck exercising devices in the Weider Home Gym Dumbbell set. Take one along and never be out of shape!



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THE GERRY PHILBIN STORY

(Continued from page 16)

back after the injury better than ever.

With his off-season exercise program, Philbin also is conscious of the need to watch his diet carefully. "A vital part of the routine Stoller started me on was diet," he explains. "I consumed a quart of milk during every workout when I started my weight gaining program. I also drank a milkshake with a protein supplement and raw eggs added every night."

Now 250 pounds is the limit body weight for Gerry. He controls it via exercise, rebuilding any that he loses during the long football season. This enables him to report to training camp at 250, figuring that he may lose a couple of pounds during the season but knowing that he has built up enough reserve strength and size to see him through. Once he first reached the 245-250 body weight level, keeping it was much easier. His present training is geared more to keep up his power than to add size. Gerry presently places special emphasis on his upper body and the calves of his legs.

"I especially need the upper body power for defensive end play," Philbin explains. 'You are constantly pushing off the blocker, pulling him one way and going the other, using your strength to move him in order to get at the quarterback. I concentrate on the arms and shoulder girdle in my off-season training, but also put in plenty of training time on my calves." Strong calves are an asset, he feels, in driving off the lineman's three-point starting stance. His quick, explosive charge helps him get the jump on the big men who play in front of him, men who often outweigh the Jets' ace defensive end by 20 to 30 pounds or more.

The Philbin football power program is simplicity itself. "I base my workout on four exercises," he says, "Bench Press, Press, Curl, and the Calf Raise (raise-on-toes). I also work in other exercises, some for the mid-section and additional power builders for variety." When he first beyan to train for strength and power, Gerry used to include three sets of Squats in his routine, doing 15 repetitions with 225 pounds, 10 with 275, and seven with 300. Now he concentrates on his upper body and lower legs, feeling that he maintains strength in his thighs without special work.

Most of Gerry's off-season training is now done at the Shelton Health Club in New York City, where a typical workout might go as follows:

1. Two sets of 25 Situps per set, on an incline.
2. Three sets of eight repetitions in the Supine Press on bench, adding 20 pounds after each set. (He begins with 200 pounds immediately after the football season, but usually takes only a few weeks to reach 330-350 pounds as a final effort.)
3. Alternate Dumbbell Press, three sets of eight repetitions with each hand, using 60-pound weights.
4. Alternate Dumbbell Curls, three sets of eight reps with each hand, using 50-pound weights. (At one time Philbin trained hard on Barbell Curls and worked up to 150 pounds for repetitions.)
5. Lateral Raises combined with Forward Raises, using 25-pound dumbbells, three sets of eight reps both forward and to the sides.
6. Upright rowing, 80-110 pounds (barbell), three sets of eight reps.
7. Two-arm Barbell Curl, 110-125 pounds, three sets of eight reps.
8. Neck isometrics, hand pressure against each side of his neck repeated several times.
9. Rise on toes, seated, with weight across knees (padded), three sets of 15 to 20 repetitions.
10. Two more sets of 25 Situps on an incline (same as first exercise).

This simple training routine takes Philbin little more than an hour to an hour and a half, but he finds it entirely satisfactory as a between-seasons power builder to recharge his muscles for the bruising work of a major league defensive end.

How important is off-season strength training to a football player? To Gerry Philbin, exercising with weights has opened the door to a great professional career, but if you ask him if strength is important he cites examples. One that has impressed Gerry very much is the comeback of Emerson Boozer, star Jets running back. Boozer was just coming into his own at the start of the 1967 season, his sensational running putting him ahead of the pack as AFL scoring leader. Then a severe knee injury threatened to end his career.

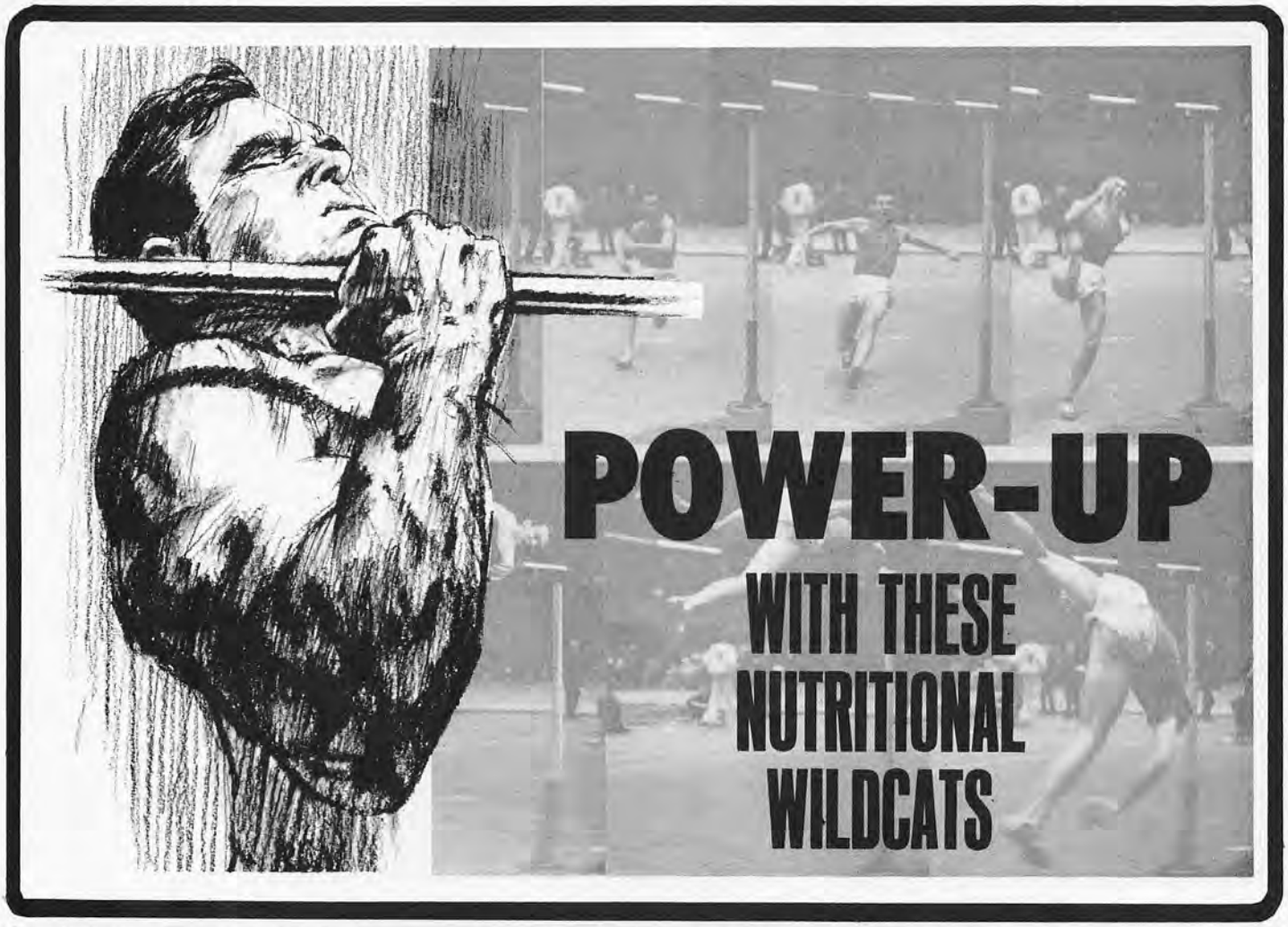
"Boozer had the knee repaired and now he lifts weights with the injured leg all the time," Philbin says. "A combination of leg extensions with heavy resistance, running, and the whirlpool bath has helped him make an amazing recovery."

Gerry also points out that the celebrated Joe Namath and running back Matt Snell both have made fine recoveries after injuries with the aid of weight training.

But Gerry Philbin himself is as good an example as can be found of the value of off-season strength training for a football player. Not blessed by nature with the whippy throwing arm of a Namath or the breakaway speed of a Boozer or Snell, it took hard training with weights for him to build the size and strength necessary to play his position with the pros. He had the desire, the quickness, and the toughness to make the grade. When he coupled these qualities with the size and strength produced by weight training, the metamorphosis was complete: from undersized college lineman to all-pro defensive end.

That's the Gerry Philbin story—an example that should inspire any youngster interested in football on to greater efforts. The rewards are worth it. Ask Gerry. Today he is a happy family man, living with his wife and young son in Long Island City. During the off-season he keeps busy as a printing salesman for the Seaward Edison Corporation.

He keeps busy selling printing except for three nights a week, that is; those are reserved for workouts at the gym, charging up the muscles he'll need for harassing opposing quarterbacks during the football season. And this year Gerry Philbin has a special reason for reporting to camp in top shape. It's not just that he's an all-pro; now he's also a member of the defending championship team. He'd like to keep it that way for a few years.



POWER-UP WITH THESE NUTRITIONAL WILDCATS

The Muscle Champs, College and Professional Athletes, Coaches and Training Table Dieticians—all have learned through experience that they can depend on Weider Natural-Organic food supplements to help feed every muscle, every nerve cell, every blood cell, every bone cell, and every skin cell in their bodies. These "Wildcats" deliver what the champs need most —ENERGY—MUSCLES—STAMINA and STRENGTH—the "plus" factors that come from eating fresh, natural, concentrated foods. And if Weider's "Wildcat" supplements deliver the "goods" for the champs, think what they can do for you in helping you build a stronger, more muscular body! ACCEPT NO SUBSTITUTES—DEPEND ONLY ON WEIDER "WILDCATS"! GO-GO-GO with the "IN" champs—put a "wildcat" into your next workout and blast off for faster, more solid muscle gains!

"YOU ARE WHAT YOU EAT" is a time-battered phrase but it's still the best and simplest way to describe what good nutrition is really all about. As a bodybuilder or athlete, you should make that phrase a guidepost in building your body or athletic career—for the foods you eat supply you with the energy and materials you need to build strong bones and big, powerful muscles. Proper foods help strengthen your ligaments, tendons, nerves and every fiber and muscle tissue in your body.

EXERCISE ALONE IS NOT ENOUGH

To succeed in your bodybuilding and athletic goals, you need to be as consistent in following a proper daily diet as you are with your workouts. Just as you must know how to use reps, sets, different exercises and routines, so must you know how to eat properly of vitamins, minerals and proteins—as well as how to control your intake of carbohydrates and calories. Without proper nutrition, your exercise program will fall short in helping you to build the kind of athletic, muscular physique you've aways dreamed of.

Here is a brief description of some of the more important vitamins, minerals, proteins and other nutrients and why you should be sure to get enough of them from your daily diet every day:

VITAMIN A: Helps muscle growth and is needed for healthy skin, eyes, teeth and hair.

VITAMIN B: Includes the entire B-Complex group. Needed for endurance, skin health and for helping the body make better use of energy-building, muscle-growing foods.

VITAMIN C: Needed for healthy body tissues and for cementing new muscle tissue into a strong, solid mass. Helps in fighting off colds and in speeding up recuperation from your workouts.

VITAMIN D: The "sunshine" vitamin is important in helping your body make good use of calcium and phosphorus for strong bones and teeth.

CALCIUM & PHOSPHORUS: Called the "Big 2" of organic minerals, both work together to build tough bones and teeth. Calcium is needed to regulate nerve and muscle action. Phosphorus is needed to help you make proper use of protein.

IRON: Needed for building healthy blood capable of carrying nourishment to all your muscle cells and to carry oxygen from your lungs to all parts of your body.

PROTEIN: Your muscle cells, nerve cells, bone cells—every part of you is made up of protein. It rebuilds the tissues that you break down during your daily work, tough workouts and practice sessions and it forms new muscle tissue. Without enough protein every day you can not make the muscular gains you want. The average man needs about 80 grams of complete protein a day to maintain bodily health. But as a bodybuilder or athlete, you require much more—as much as 150 to 200 grams a day. This is because you lead a more active life and burn up a greater amount of protein.

CALORIES: Are units of heat used to measure the heat or energy-producing content of foods. You need about 3,500 calories daily to main-

tain your present bodyweight. If you eat less than this amount, you'll lose weight—if you eat more, you'll gain weight. When you train hard, you may burn up about 1,500 calories a day. So to keep from losing weight you need to eat an extra 1,500 calories or a total of about 5,000 daily. If you want to gain weight —say up to a pound a day, then you need to eat 8,000 or more calories daily or an extra 3,500. You must gauge your calorie intake according to the amount of effort you put into your workouts—the harder you train the more you need.

CARBOHYDRATES: Are units of carbon, hydrogen and oxygen found in starches and sugars that supply the body with energy. They are absorbed and circulated rapidly throughout your body, giving you fast energy for your workouts. The average person needs about 80 grams of carbohydrates daily but athletes and bodybuilders should take at least 150 grams. Carbohydrates work something like calories. If you eat more of them than your body can burn up through exercise, the excess is turned into fat and you gain weight.

The above nutrients and others are found in the foods you eat. But because you are bound to skimp on meals, or miss them or at times become "lazy" about watching your daily diet you may not get enough of these valuable nutrients to meet your musclebuilding needs. Also, in your enthusiasm to build muscle, you are apt to train harder than you should and as a result burn up vitamins, minerals, proteins, calories, etc. faster than you can replace them through your regular diet.

It is for this reason that the Weider Research Clinic developed a complete line of vitamin, mineral, protein and other supplements —to provide you with nutritional "insurance" every day—to compliment your meals and to help you get the daily quota of nutrients you need for making your musclebuilding or athletic program a success.

We believe the Weider "Wildcat" line of supplements to be your best choice because they are made from natural-organic sources—no chemicals, no additives, no synthetics. They are produced and packaged under controlled conditions to guarantee freshness, potency and quality. These are some of the reasons why Weider supplements are the favorites of bodybuilders and athletes everywhere. They've learned to depend on them as aids in accomplishing their bodybuilding and athletic goals —why not YOU?

Look over the list of Weider "Wildcats" on the following pages and select those that will give you the nutritional "insurance" your training program needs for bringing best results. Then mail in your order for fast service. It will be an investment in your health and muscle-building success.

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CRASH WEIGHT GAIN
Formula #7
(Metered Drink)
Gain Up to a Pound a Day the Natural Way

Mix 1 can of CRASH WEIGHT GAIN into a quart of milk for 1,800 extra calories. For still more calories—up to 3,500 a day, add a banana, an egg or two, some honey and other of your favorite mixable foods. This will help you "Gain-a-Pound-a-Day"—up to 14 pounds in 14 days! 7 years of testing with the champs have made milkshake-tasting CRASH-WEIGHT a favorite with weight-conscious bodybuilders and athletes everywhere. Easy-to-digest and quickly assimilated. **Measured "CRASH-PAK"**
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Same formula as the metered drink but you "measure-it-yourself". Take it whenever you want. Ideal for bodybuilders on a long range weight gaining program. Add to milk, cereal, etc. **3-lbs. box (5 to 7 days supply. Your choice of vanilla or chocolate)** **$5.98**

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Liquid
The Liquid Protein Meal-In-A-Can—30 complete protein grams in a glass (almost ½ M.D.R. established by Govt.).

Exclusively Weider, this natural-organic great-tasting protein drink is the favorite of Draper, Scott, Poole and the other IFBB "greats". Each can gives you 30 grams of complete protein—equal to the protein content of a complete steak dinner and the equivalent of about 70 regular protein tablets! With liquid "101" you don't overload your stomach with too much protein food and you can do away with old-fashioned protein tablets forever! Quickly and easily digested for fast assimilation into your bloodstream—where it goes to work helping to feed, build and repair the muscle tissue you need to gain more muscular size and greater "wildcat" power. Comes in 3 delicious flavors.
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With Bromelain, Pineapple Enzyme to Promote Better Protein Digestion

Ideal for mixing into milk, juice, etc., as well as adding to soups, cereals, gravies and other of your favorite foods. Contains Bromelain, the pineapple enzyme that activates protein for fuller digestion (no waste) and faster muscle-building assimilation. Controlled quality in manufacture guarantees freshness and potency. A great way to get your protein "insurance" for those "high-powered" workouts. Convenient 2-lb. package saves you money, too
3 lbs. Box. Your choice of vanilla, chocolate or strawberry) **$5.98**

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MUSCLE DENSITY
Formula RX7
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Lose Weight, Build Definition—The Safe Natural Way—

Here's a complete, muscle-defining "Meal-In-A-Can". When trying to trim your waist, hips and legs and sharpen your "cuts" and definition, substitute a glass of WEIGHT LOSS for one of your daily meals—it will help speed your way to a more muscular, shapely body. WEIGHT LOSS has everything you need to keep you going all day long; vitamins, minerals and proteins—so that you don't lose energy or muscle size—only unwanted fat. 100% natural-organic —no chemicals or additives.
12-can "SlimPak" (12 to 24-day supply. Your choice of chocolate or vanilla) **$9.95**

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Formula RX7
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Same great muscle-defining formula as the "Slim-Pak" but you "measure-it-yourself" (according to instructions on the label). Just add to milk, water or juices, shake well, refrigerate and take whenever you want to lose some weight fast! **3-lbs. box (Your choice of vanilla or chocolate)** **$5.98**

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A Delicious Super-Energy Liquid Carbo Meal-In-A-Can for the Active Bodybuilder—

INSTA-POWER Liquid is a powerhouse of energy-building carbohydrates and muscle-building nutrition-in-a-can. Drink it right out of the can to restore flagging energy—to keep you "snarling" and full of bodybuilding fight throughout your bomb/blitz workouts. The champs take INSTA-POWER 30 minutes before a workout or game for fast, extra energy. With only 235 calories, it's formulated to help produce sinewy muscle and no fat. This complete, nutritious energy-meal-in-a-can has added vitamins and minerals to help guard you against muscle-building deficiencies. Tastes great and easy-to-digest. **12-can pak (Your choice of chocolate, vanilla or eggnog)** **$9.95**

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Put the Predatory Power of a Springing Tiger into Every Breakfast—and Feel Grrreat All Day!

Just one 10 oz. glass of INSTANT NATURE BREAKFAST gives you:

The Vitamin C Power of 6 oz. of fresh orange juice!

The Protein Power of 3 farm-fresh eggs!

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It's a complete, nourishing "breakfast-in-a-can". When you take INSTANT NATURE BREAKFAST with your regular breakfast, you double your Protein-Carbo power and build your blood sugar level for "blast-off" energy all day long—energy you need to keep up your "jungle cat" bodybuilding progress. It's high in vitamins and protein and rich in minerals and enzymes. It's low in saturates (fat) making it light, gentle, easy to digest and assimilate for full muscle-building benefit. And it's 100% natural-organic—no preservatives . . . no refined sugar or salt . . . no chemical additives or adulterants. Remember, Government tests show that breakfast is your most important meal—make it your **best** and most **powerful** meal by putting a "tiger" into it every morning with INSTANT NATURE BREAKFAST.

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The "High-Powered" Muscle-Building Confection. A sensational and delicious new way to get some of your protein every day. Helps give your muscles the "grow power" and "go power" they need. Better and a thousand times more "muscle-nourishing" than any other candy you can buy! Made only with highest grade protein and other natural-organic foods; raw sugar, soya powder, molasses, peanut butter, raisins, carob powder, wheat germ oil, etc.—eat 'em anytime, anywhere.

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Adds Natural, Nutritious Fun to Weight Gaining Here's the fun way to add a fistful of 282 calories of good, musclebuilding nutrition to your diet to help you in making greater weight gains. Munch on a CRASH-WEIGHT bar in-between meals or whenever you need a fast "Gain-Weight" pick-up. Made with raw sugar, honey, coconut, carob powder, wheat germ and other natural-organic foods.

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SUPER PROTEIN (Tablets)

With Bromelain, the Pineapple Enzyme that Promotes Better Protein Digestion Plus added B-1, B-2, and Niacin for Nutritional Energy "Insurance"—

Bromelain has been added to this "Wildcat", too to make it the modern "Go-Go" protein tablet that makes all others obsolete. The champs munch on them during the day between meals to help their muscle-growth along. SUPER PROTEIN is natural-organic with added vitamins and minerals for extra nutritional "insurance"—there are no chemicals or additives—only the natural goodness of Protein and Bromelain. Eat them like candy in 3 great-tasting flavors. **360 tablet canister (1-month supply. Your choice of vanilla, chocolate, strawberry)** **$4.95**

Pioneered by Weider—STARTLINGLY NEW!

BD/BU Tablets

Natural Vitamin C from Rose Hips Plus Vitamin P—

The great "Break-Down/Build Up" recuperative tablets that are depended upon by the IFBB champs to help promote faster muscle growth. Each tablet contains 300 mgs. of vitamin C from natural-organic rose hips—along with 350 milligrams of vitamin P (the bioflavonoids). Both vitamins work together to help build millions of tiny blood capillaries—the "fuel lines" to your muscles. They also help in fighting off colds, viruses and other infections that can put a real crimp into your workout program. For your C-P "insurance" take Weider BD/BU tablets. **100 tablets (1-month supply)** .. **$3.50**

Pioneered by Weider—STARTINGLY NEW!

ENERGEX

The Energy-Building Tablet of Bodybuilders & Athletes—

ENERGEX is especially formulated for the energy demands of bodybuilders and athletes —with extra potencies of vitamins B-1, B-2, A, C, D, in addition to other important nutrients and compounded in a pure bone meal base. When taken along with your regular diet ENERGEX can help "spark" the energy you need for building inches of championship muscle. Good-tasting in convenient tablet form.
180 tablets (1-month supply) **$3.50**

Pioneered by Weider—NEW Triple E

ENERTOL Formula 3RXE

100% Cold-Pressed Wheat Germ Oil (Capsules)

NOW! Only Weider offers you a triple-strength wheat germ oil. You get 30 international units of vitamin E instead of the usual 10—that's 3 times the "Go-Go" Vitamin E potency of regular top brands—and WITHOUT EXTRA COST! Weider's **New Triple E ENERTOL** is 100% cold-pressed wheat germ oil, the richest known source of vitamin E—there are no mixed oils to cheapen its quality, as is the case with the so-called "germ" oils advertised in other bodybuilding magazines. Tests at leading universities have shown that only cold-pressed wheat germ oil can increase endurance 51% (when combined with exercise). It also helps promote better blood circulation and in disposing of fatigue toxins which form in your muscles during workouts. Accept no substitutes—insist only on Weider's New Triple E ENERTOL the choice of athletes and bodybuilders everywhere. **100 capsules (1-month supply)** **$3.50**

Pioneered by Weider—NEW Triple E

ENERTOL Formula 3RXE

100% Cold-Pressed Wheat Germ Oil (Liquid)

Same new Triple-Strength formula as above but in liquid form—for those bodybuilders who can't swallow capsules. Use ENERTOL liquid as a salad dressing or drink it by the teaspoon, each one gives you 30 I.U. of Vitamin E for the stamina "insurance" you need for your grueling training sessions.
8 oz. Liquid (1-month supply) **$3.50**

BREWER'S YEAST & IRON Tablets

A rich source of the vital B-Complex vitamins that help the body convert food into energy for your workouts—and which help stimulate appetite, strengthen muscles and keep your nerves healthy. Natural brewer's yeast contains every known B vitamin and perhaps some that haven't been discovered yet. For the highest quality obtainable, with iron added under strict laboratory supervision, Weider's brewer's yeast is supreme—give it a try.
360 tablet size (1-month supply) **$1.00**

VITAMIN-MINERAL "100" Tablets

100% Natural with over 20 different Nutrients —Coated with Protein

The choice of the IFBB champs! 100% natural —no synthetics or chemicals. VITAMIN-MINERAL "100" tablets help guard you against deficiencies of vitamins A, D, C, B-1, B-2, B-12 and E. Niacin, folic acid, choline, inositol, citrus bioflavonoids, calcium, iron, phosphorus, iodine, magnesium, etc.—elements you may be using up in your hard workouts faster than you can replace them through your regular foods. Do eat a balanced diet and do take V-M "100" tablets to be sure you don't fall short of any of these important musclebuilding nutrients.
100 tablet size (3-month supply) **$4.00**

LIVER-PLUS with vitamin B-12

Desiccated Liver—An Excellent Source of B-Complex Vitamins—

Another excellent source of the B-vitamins. Fresh calf liver is one of nature's best bodybuilding foods—rich in protein, vitamins, and minerals. But since you aren't always able to eat fresh liver every day, Joe Weider has come up with LIVER-PLUS, a desiccated liver. It's made by concentrating beef liver at low temperature to preserve its rich vitamin-mineral content and by removing only the water.
100 tablets (1-month supply) **$1.60**

VIGATONE

Vitamin B Tonic with Iron

Building muscle depends a great deal on how fast the blood delivers food nutrients to them. When blood is not up to par, nutritionally, muscle growth tends to slow down, you feel tired and lack the necessary energy to spring into your workouts. Guard against this condition by including VIGATONE in your daily diet. It helps supply your body with iron and just the right B-vitamins to aid the body in absorbing it. Used by "Weider Generation" champs.
12 oz. liquid (up to a month's supply) **$3.50**

Pioneered by Weider—STARTLINGLY NEW!

PROTOZYME (Tablets)

Bromelain Pineapple Enzyme—An Aid to Better Protein Digestion—

Because your body doesn't always absorb all the protein you eat at meals (cooking destroys the digestive enzymes) much of it goes to waste . . . instead of into your muscles where it belongs. One PROTOZYME tablet taken after each meal works fast to help you digest and assimilate protein more completely so that you avoid wastage. Stop wasting the musclebuilding protein in the foods you eat—make natural-organic PROTOZYME a daily part of your meals for more complete protein assimilation.

100 cherry-flavored tablets (1-month supply) **$3.00**

VITAMIN E. CHEWABLES

The Most Natural Form of "E"

You'll welcome this great new musclebuilding supplement from Weider—it's one of the most pleasant ways to get your daily share of "E"—the vitamin that helps build "Go-Go" endurance and stamina for championship musclebuilding results. It also helps you utilize the protein and fats you eat daily. Convenient to handle and carry anywhere—needs no refrigeration.

100 cherry-flavored tablets (1-month supply) **$4.00**

NATURAL VITAMIN C Tablets

Rose Hips Complex & Acerola

The champs take over 1000 units of "C" daily to help keep blood vessel walls (your muscle fuel pipelines) strong, avoid strains, aches, muscle pulls and to help "cement" their muscle tissue into a solid, healthy mass. If you are a "bomb/blitzer", get your daily quota of vitamin C and the bioflavonoids by taking Weider's NATURAL VITAMIN C tablets. Each tablet contains 300 milligrams of vitamin C—about 1000% of your Minimum Daily Adult Requirement. Made with rose hips and the acerola cherry, the richest known source of vitamin C.

200 tablets (3-month supply) **$3.00**

VITAMIN C Liquid

From Imported Wild Rose Hips, 28 Times Richer in Vitamin C than Fresh Orange Juice—

For faster assimilation when you need vitamin C most, Weider's VITAMIN C Liquid is your best bet. "C" is essential for firm muscle tissue, good eyes and teeth and it is quickly used by bomb/blitzing bodybuilders and athletes. But since it can't be stored in the body, you should replace it several times daily with the help of VITAMIN C Liquid. Each tangy-tasting teaspoonful supplies you with 10 times the Minimum Daily Adult Requirement of vitamin C.

8 oz bottle (1-month supply) **$5.00**

SUPER "B" CONCENTRATE

Extra High Natural B-Complex Potency

The B-Complex group of vitamins work to release the "explosive" energy in the carbohydrate foods you eat for your super-blitzing workouts. They also aid in keeping your muscle tone healthy, building strong red blood and in fighting off fatigue. You use up a great deal of the B-vitamins in your "jaguar-tough" exercise routines—probably more than you can get through your regular diet. To meet your extra B-Complex demands, take SUPER "B" CONCENTRATE. One capsule has the potency of 35 regular brewer's yeast tablets. It contains 250% of the MDR of vitamin B-1 . . . 200% of vitamin B-12 . . . 166% of niacin plus s[illegible] potencies of other important B-vitamins.

100 tablets (3-month supply) **$4.00**

New PROTEIN-RICH SOUPS

Natural-Organic with Added Vitamins and Minerals

They help make every meal a delicious higher protein muscle-building meal. Ideal as a coffee break substitute with its "home-made" flavor—in vegetable, chicken or beef broth. Dave Draper says: "Most delicious soups I've ever tasted! Those tender chunks of chicken, nutritious vegetables and hearty beef have made a big hit with me!" **6-can pak (Your choice of chicken, vegetable or beef)** **$3.50**

MUSCLE TONE

The Muscle Rub-Down—That Helps Keep Muscles Growing After Your Workout—

Take a tip from the "Weider Generation" champs: after a grueling "blitz" session give your muscles a brisk rub-down with Weider's MUSCLE TONE. It works like "magic" to help relieve soreness and stiffness and helps remove waste matter from your muscles accumulated during workouts) by stimulating blood circulation. Sergio Oliva finds it a great way to condition the skin and relax tense muscles. Try it. **Big 1-pint bottle** **$2.00**

LAX-O (Tablets)

Curb Constipation The Natural Way—No Gripping Pains—No Purging—No Harsh Drugs

If you're pestered by constipation, here's a great new way to help relieve it without harsh drugs. LAX-O is non-habit-forming, causes no discomfort and is harmless. It can be the bodybuilder's or athlete's "friend-in-need".

300 LAX-O tablets **$3.50**

BON-PLUS

Pure Bone Meal Plus Red Bone Marrow with added Vitamins B-1 & D—

A superior grade of tasty bone meal tablets, naturally rich in calcium, phosphorus, magnesium and fluorine—all of which aid in building and maintaining strong bones and teeth. It also contains vitamins B-1 and D which work to properly utilize calcium and phosphorus in your body. BON-PLUS is 100% natural-organic and an essential "insurance" supplement to champs in the "know" such as Larry Scott, Chuck Sipes, Dave Draper and others.

100 tablet size (over a month's supply **$1.50**

WEIGHT-PLUS STIM (Liquid)

High Potency Appetite Stimulant Formula with B-12

To build big muscles you must eat a "lion-sized" bodybuilder's meal of protein-rich foods every day. Weider's WEIGHT-PLUS STIM will help strengthen your appetite for these muscle-gaining foods because it contains nature's own appetite stimulants; iron, niacin, vitamins B-1, B-2, B-12 and more. Works great by itself and even better when combined with famous CRASH-WEIGHT GAIN Formula #7, too. Give WEIGHT-PLUS STIM a try for perking up a "picky" appetite.

16 oz. liquid (1-month supply) **$3.50**

WEIGHT-PLUS STIM (Tablets)

High Potency Appetite Stimulant

Same natural-organic appetite-stimulating formula as the liquid but in convenient tablet form. Ideal if you're squeamish about tasting your food supplements. Only 3 tablets taken before each meal works wonders in strengthening your appetite for better muscle gains.

180 tablets (1-month supply) **$3.50**

USE THIS COUPON TO MUSCLE-UP WITH WEIDER'S "WILDCATS"

(East of the Rockies Order From:)

WEIDER'S SUPPLEMENTS
"WILDCATS DIVISION"
801 Palisade Ave. Dept. 340-109
Union City, N.J. 07087

(West of the Rockies Order From:)

WEIDER BARBELL CO.
MUSCLE BEACH
1220-5th St.
Santa Monica, Calif. 90401

Dear Joe: Rush me the "Wildcat" food supplements described below. I need this nutritional "insurance" for my "jaguar-tough" bomb/blitz routines to help build larger muscles and greater power faster!

SIZE	FLAVOR	PRODUCT	QUANTITY	PRICE

I have enclosed $_____ in full for the above order. TOTAL: $_____

Send My Order To:

NAME ..... AGE .....

ADDRESS .....

CITY ..... STATE ..... ZIP .....

(please print clearly)

WHERE YOU CAN BUY THE WILDCATS

YOU'VE FLIPPED OVER ON THE "MR. AMERICA" SCENE!

FORGET about going from one health foods store to another for the Weider Wildcats you dig, to help you build vigor, vitality, and strength. On these pages are listed the finest health foods stores which carry our Wildcats; if the one in your town isn't here, send us the name and address of the store and we'll ship some Wildcats in for you. Remember: Only Weider makes Wildcats for athletes, body-builders, and men on the go! They are loaded with protein, vitamins, minerals . . . just what you need for Wildcat action. They are not made for little old ladies – so *accept no substitutes.* If any of these stores try to substitute a Weider Wildcat for a tame pussy-cat, drop us a line and we'll remove their name and fill your order *free of charge.* So hurry to your local health food store listed here . . . start going Wildcat – Drive 'Em Wild!

ALABAMA

Birmingham: Foods for Health, 1923 - 11th Ave. S.
Florence: Valley Health Foods, 108 Seminary St.
Montgomery: Aldridge Natural Foods, Inc., 333 Dexter Ave.

ARIZONA

Phoenix: Arcadia Health Foods, 4216 E. Indian School Rd.
Phoenix: Arizona Health Foods, 4424 N. 19th Ave.

ARKANSAS

Ft. Smith: Olde Fashioned Foods, Inc., 123 N. 18th St.

CALIFORNIA

Burbank: Burbank Health Food Store, 138 N. San Fernando Blvd.
Covina: Man's World, 300 N. Citrus
El Monte: Valley Health Food Center, 10910 Valley Mall
Glendale: House of Vitamins, 204 N. Brand Blvd.
Hanford: Melvin Cone Health Foods, 886 W. Grangeville Blvd.
Huntington Park: House of Vitamins, 6706 Pacific Blvd.
Los Angeles: Entin's House of Nutrition, 1924 W. 7th St.
Los Angeles: Jay's Health Foods & Vitamins, 5661 Santa Monica Blvd.
Los Angeles: Paradise Health, 312 W. 6th St.
Los Angeles: West Coast Nutritional Products, 4834 Whittier Blvd.
Oakland: Sherman's Health & Diet, 1821 Park Blvd.
Oceanside: Oceanside Nutrition Center, 210 North Freeman, 722-5445
Sacramento: Elliot Health Foods, 3337 El Camino Ave.
San Diego: A-1 Vital Health Foods, 829 Broadway
San Francisco: Giannetti Natural Foods, 1145 Market St.
Santa Ana: Continental Health Food Shoppe, 300 N. Broadway
Santa Monica: Weider Health Foods, 1220 - 5th St.
San Ysidro: House of Nutrition, P.O. Box 595

COLORADO

Denver: General Nutrition Centers, New Englewood Mall (Phone 781-4150)
Denver: Veva Enterprises, 7 So. Broadway

CONNECTICUT

Bridgeport: Dorman's Pharmacy, 944 Madison Ave.
Bridgeport: General Nutrition Centers, Lafayette Plaza
Bridgeport: Nature Food Centers, 11 Post Office Arcade, 1001 Main St.
Danbury: Four Seasons Health Foods, 91 South St. (Phone 743-7803)
Hartford: Nature Food Centres, 69 Church St.
Stamford: Azusa Diet & Vitamin Center, 19 Cedar Heights Rd. (Phone 322-9177)
Stamford: Stamford Nutrition Center, 35 Bedford St. (Phone 327-8235)

GO WILD GO WILDCAT NOW

DISTRICT OF COLUMBIA

Washington: Good Diet Shop, 1226 H St. N.W.
Washington: Olivia's Health Food Service, 1825 Columbia Rd. N.W.

FLORIDA

Ft. Lauderdale: Lauderdale Health Foods, 129 S.E. Second St.
Miami: Hale's Health Foods, 109 W. Plaza Center, Northside Shopping Center
Miami: International Health Studio, 746 N. W. 62nd St.
Miami: Dr. G. Robinson, Box 1341 I.A.B.
Pensacola: Four Winds Shop, Inc., Town & Country Plaza
Perrine: Franjo Pharmacy, 9715 E. Hibiscus
Tallahassee: General Nutrition Centers, Tallahassee Mall
Tampa: Keepwell Nutrition Center, 714 W. Kennedy Blvd.
West Palm Beach: Jack's Health Center, 318 S. Dixie Highway

GEORGIA

Atlanta: Health Food Shop, 39-41 Walton St.
Atlanta: Health Unlimited, Toco Hills Shopping Center, 2993 N. Druid Rd. N.E.
Atlanta: Helen's Health Food Shoppe (Dept. of Wheeler's, Inc.), 557 Peachtree St. N.E. (Phone 875-3877)
Atlanta: Van Luden Foods, 831 York Ave. S.W.
Augusta: Augusta Sporting Goods Co., Inc., 210-212 Eighth St.
Valdosta: Luke's Health Club, 113 N. Ashley St.

IDAHO

Pocatello: Gate City Health Food Center, 428 West Lewis (Phone 232-5722)

ILLINOIS

Antioch: Polson's Dietary Foods, 883 Main St.
Chicago: Eaton's Dietary Foods, 28 E. Van Buren St.
Chicago: Kramer's Health Food Shoppe, 29 E. Adams St.
Chicago: Logan Diet Foods, 2902 W. Fullerton Ave.
Chicago: Nature Food Centres, 12 W. Washington St.
Forest Park: B & B Health Food Center, 7504 W. Madison St.
Oak Lawn: American Health Foods, 5142 W. 95th St.
Peoria: Peoria Health Food Center, 428 Main St.

INDIANA

Evansville: Roberts Health Center, 1003 So. St. James Blvd.
Indianapolis: Brown's Health Food Store, 145 E. Ohio St.

IOWA

Dubuque: General Nutrition Centers, Kennedy Mall (Opening Fall 1969)
Cedar Rapids: The Kem Co. (Vital Health Foods Co.), 1404 First Ave. E.

KANSAS

Kansas City: Central Health Foods, 1219 Central Ave.
Stockton: Ben Franklin Store

LOUISIANA

Baton Rouge: Evelyn's Vitality Food Shoppe, 4213 Government St.
New Orleans: Fine Foods, 8108 Earhart Blvd.

KENTUCKY

Bowling Green: General Nutrition Centers, Bowling Green Mall Shopping Center

MAINE

Portland: Mitchell's of Portland, 25 Forest Ave.

MASSACHUSETTS

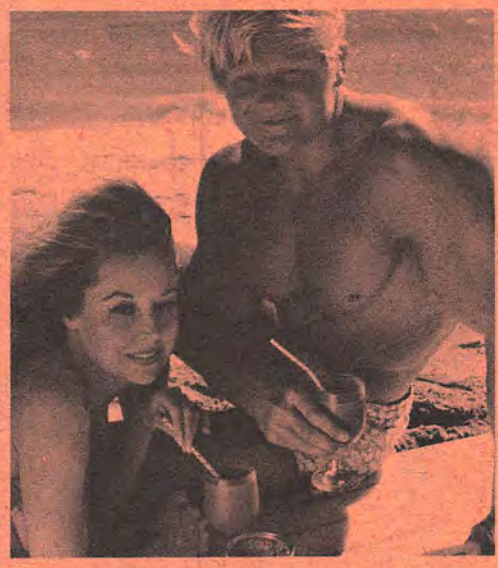
Boston: Nature Food Centres, 33 Temple Pl.
Boston: Nature Food Centres, 192 Massachusetts Ave.
Brockton: Nature Food Centres, 18 School St.
Brookline: Nature Food Centres, 1338 Beacon St.
Cambridge: Nature Food Centres, 714 Massachusetts Ave.
Lynn: Nature Food Centres, 166 Union St.
Malden: Nature Food Centres, 172 Pleasant St.
Springfield: General Nutrition Centers, Eastfield Mall (Phone 543-2379)
Springfield: Nature Food Centres, 138 State St.
Waltham: Nature Food Centers, 420 Moody St.
Worcester: Nature Food Centres, 31 Pleasant St.
Worcester: Mac-Ben Sporting Goods Co., 530 Main St.

MICHIGAN

Battle Creek: The Health Food Center, 264 W. Michigan Ave.
Berkley: Berkley Health Foods, 2840 Coolidge Highway
Detroit: Detroit Vital Foods, Inc., 22200 Grand River Ave.
Detroit: Nutrition Brands, 17710 Fenkell Ave. (Phone BR 3-3366)
Detroit: Vital Foods, Inc., 1454 Broadway
Detroit: Vital Foods, Inc., Eastland Shopping Center
Highland Park: Marlen Health Shoppe, 16537 Woodward Ave.
Lansing: Randall Health Foods, 223 So. Washington Ave. (Phone 487-5837)

MINNESOTA

Minneapolis: Health Foods, Inc., 2611 Central Ave. N. E.



MISSOURI

Clayton: Clayton Natural Foods, 7818 Forsyth Blvd.
Kansas City: Nature Food Centres, 110 McGee St.

NEW HAMPSHIRE

Bedford: Richardson's Food Service, 11 Woodbury Lane
Berlin: Renaud C., 240 Pleasant St.

NEW JERSEY

Atlantic City: Artman's Health Foods, 1508 Pacific Ave.
Bergenfield: Guerra's Sport Shop, 53 So. Washington Ave.
Bergenfield: The Health Shoppe, 16 Portland Ave.
Cherry Hill: General Nutrition Centers, Cherry Hill Mall (Phone 663-0975)
E. Brunswick: Shore Fruit, Inc., 6 Eggers St.
East Orange: East Orange Sporting Goods, 405 Main St.
Edison: Health House, Menlo Park Shopping Center, Rte. 1
Elizabeth: The Diet Shop, Inc., 1213 E. Grand St.
Jersey City: Advanced Health Foods, 266 Fairmount Ave.
Jersey City: Dennis' Gym, 719 Bergen Ave.
Lakewood: Lakewood Health Foods, 222 Clifton Ave.
Lodi: Health & Gourmet Foods Center, 22 Essex St.
Moorestown: General Nutrition Centers, Moorestown Mall (Phone 235-3937)
Newark: ABC Health Foods, 1191 Raymond Blvd. (Phone 642-0378)
Newark: Zinn's Health Food Store, 196 Halsey St.
Passaic: Helen's Health Food Shop, 235 Washington Pl.
Paterson: Felicia's Vital Food Service, 82 Market St. (Phone LA 5-1976)
Plainfield: Plainfield Health Food Service, 218 E. Front St.
Ridgewood: Ridgewood Dietary Center, 11 Oak St.
Summit: Summit Health Food Centre, 494 Springfield Ave.
Wayne: General Nutrition Centers, Willowbrook Mall (Opening Fall 1969)
Westville Grove: Super's Health Club, Delsea Dr.

NEW YORK

Albany: Nature Food Centres, 20 Steuben St.
Bay Shore: Bay Shore Health Club, Inc., 9 Dayton Ave.
Bethpage: Long Island Health Gym, 611 Hicksville Rd.
Bronx: Health Aid Center, 3046 Third Ave., N. 156th
Brooklyn: Friedman's Sporting Goods Co., 930 Flatbush Ave.
Brooklyn: Healthway Diet Foods, 759 Flatbush Ave.
Brooklyn: Nature Food Centres, 385 Jay St.
Brooklyn: Stamena Natural Foods, 8314 - 5th Ave.
Brooklyn: Stur-Dee Health Products, Inc., 238 Livingston St.
East Syracuse: Diet & Health Shoppe, 207 W. Manlius St.
Flushing: Flushing Health Foods, 136-86 Roosevelt Ave. (Phone 762-9520)
Forest Hills: Forest Hills Health Food Center, 116-19 Queens Blvd.
Hudson: Steiner's Sport Center, Inc., 301-3 Warren St.
Huntington Station: McCrory's Health Foods & Diet Center, Walt Whitman Shopping Center, Rte. 10
Jackson Heights: Jackson Heights Health Foods, 8306 - 37th Ave.
New York: All Diet Foods, Inc., 16 W. 40th St.
New York: Brownie's, 19 E. 16th St.
New York: Gem Stores, 29 W. 14th St.
New York: Mid-City Health Club, 210 W. 42nd St.
New York: Nature Food Centres, 1093 Sixth Ave.
New York: Nature Food Centres, 600 Eighth Ave.

NEW YORK (Continued)

New York: Sheridan Square Health Studio, 244 W. 4th St.
Old Bethpage: Purv's Sports Corner, 744 Old Bethpage Rd.
Poughkeepsie: House of Nutrition, 5 Collegeview Ave.
Rochester: Nature Food Centers, 405 Main St.
Smithtown: McCrory's Health Foods, Smith Haven Mall
White Plains: White Plains Health Hoods, 108 Mamaroneck Ave. (Phone 761-9680)
Yonkers: Silhouette & Figure Salon, Ltd., 340 So. Broadway

NORTH CAROLINA

Asheville: Asheville Health Mart, 79 Patton Ave. (Phone 254-1267)
Asheville: General Nutrition Centers, Asheville Mall (Opening Fall 1969)
Asheville: Good Health Place, 26 Wall St.
Fayetteville: M. Schmidt Health Foods, 5203-5 Raeford Rd.
High Point, Mr. John E. Sikes, 1009 Gordon St. (Phone 882-0654)
Raleigh: Natural Health Foods, 8 E. Hargett St.

OHIO

Akron: General Nutrition Centers, Akron Square Shopping Center (Phone 773-3018)
Akron: General Nutrition Centers, Summit Mall (Phone 864-8979)
Cincinnati: Spatz Health Foods, 607-609 Main St.
Cleveland: Vitality Health Food Shops, Inc., 51 Old Arcade
Dayton: General Nutrition Centers, Salem Mall (Phone 837-3050)
Dayton: House of Health, 310 E. 1st St.
Maple Heights: Healthway Natural Foods, 5243 Warrensville Center Rd.
Marion: General Nutrition Centers, Southland Mall (Opening Fall 1969)
Marion: Nichol's Nature Food Store, 262 N. State St.
Stow: General Nutrition Centers, Stow-Kent Shopping Center (Phone 688-4298)
Toledo: Dietrich's Health Foods, 519 Monroe St.
Warren: General Nutrition Centers, Eastwood Mall (Opening Fall 1969)
Youngstown: Health Food Center, 12 Parkade

OKLAHOMA

Ardmore: House of Health (Brown's), 12 - 3rd Ave. N.E.
Oklahoma City: Nutritional Food Center, 1024 Clossen Blvd.
Tulsa: A Nutritional Food Center, 121 E. 4th St.

OREGON

Salem: Natural Health Center, 1073 Commercial St. S.E.

PENNSYLVANIA

Bally: Merit Food Co., Inc., Box 177
Butler: General Nutrition Centers, Beaver Valley Mall
Carlisle: General Nutrition Centers, MJ Mall (Phone 243-3447)
Charlerol: S. Yareck, 337 McKean Ave.
Erie: General Nutrition Centers, Kearsarge Mall (Opening Fall 1969)

DRIVE 'EM WILD WITH WEIDER'S WILDCATS

PENNSYLVANIA (Continued)

Erie: General Nutrition Centers, Liberty Shop Center (Phone 866-2033)
Greensburg: General Nutrition Centers, Greengate Mall (Phone 834-7857)
Harrisburg: General Nutrition Centers, Colonial Park Plaza (Phone 545-1572)
Kingston: Natural Food Centre, 710 Wyoming Ave.
Lancaster: General Nutrition Centers, Park City Shopping Center (Opening Fall 1969)
McKeesport: General Nutrition Centers, 204 Fifth Ave. (Phone 673-9448)
Monroeville: General Nutrition Centers, Monroeville Mall
North Versailles: Health Age Pantries, Inc., Eastland Shopping Plaza
Philadelphia: Lahr's Nutritional Food Center, 5537 N. 5th St.
Philadelphia: Nature Food Centres, 1102 Chestnut St.
Pittsburgh: General Nutrition Centers, 418 Wood St. (Phone 281-4493)
Pittsburgh: General Nutrition Centers, 5909 Penn Ave. (Phone 441-4247)
Pittsburgh: General Nutrition Centers, North Hills Village (Phone 364-0688)
Pittsburgh: General Nutrition Centers, South Hills Village (Phone 833-3811)
Plymouth-Meeting: General Nutrition Centers, Plymouth-Meeting Mall (Phone 828-5353)
Reading: General Nutrition Centers, Berkshire Mall (Opening Fall 1969)
Scranton: General Nutrition Centers, Southside Shopping Center (Phone 342-7074)
Scranton: General Nutrition Centers, Viewmont Mall (Phone 344-6690)
Sharon: General Nutrition Centers, Shenango Valley Mall (Phone 981-2261)
York: General Nutrition Centers, York Mall (Phone 755-1383)

RHODE ISLAND

Pawtucket: Natuere Food Centres, 18 High St.
Providence: Nature Food Centres, 112 Fountain St.

SOUTH CAROLINA

Columbia: Barkoot's Karate School, 4330 Jackson Blvd.

TENNESSEE

Chattanooga: Foods for Life Nutrition Center, 4120 Ringgold Rd.
Lebanon: Plaza Health Studio, North Cumberland St.

TEXAS

Beaumont: American Health Foods, 3847 Stagg Dr.
Big Spring: Big Spring Health Food Center, 1305 Scurry St.
Columbus: Kenneth L. Bayer, 134 Railroad Ave.
El Paso: El Paso Health Food Center, 2700 Montana Ave.
Houston: General Nutrition Centers, Almeda Mall (Phone 944-5562)
Houston: General Nutrition Centers, Northwest Mall (Phone 681-5006)
Port Arthur: Mr. T's Health Stores, 3339 Gulfway Dr.
San Antonio: Harmon's Health Service, 110 Jefferson St.

VIRGINIA

Norfolk: Health Food Center, 432 Gronby St.

WASHINGTON

Seattle: Randi's Tour Food, 12535 Lake City N.E. Phone EM 4-1064

WEST VIRGINIA

Fairmont: Johnny's Sport Shop, 1512 Locust Ave.

WISCONSIN

Milwaukee: Langlois Health Food Mart, 2712 N. 27th St.
Milwaukee: Lee's Health Mart, 5919 W. North Ave.
Milwaukee: Natural Food Shop, 3048 S. 13th St.
Milwaukee: Nature Food Centres, 415 West Wisconsin Ave.

PUERTO RICO

Santurce: Malta Corona Gym, 1504 Fernandez Juncos (Also supplies other retailers in Puerto Rico; contact for names and addresses.)

VIRGIN ISLANDS

Christiansted, St. Croix: Town Pharmacy, 1 King St.
St. Thomas: C & M Caron, Inc., P.O. Box 1735
St. Thomas: Cathedral Pharmacy, 22 Kronprindsins Gode

WEST INDIES

St. John's, Antigua: Selwyn Palmer — "The Champions," New Gate St.

WHOLESALE JOBBERS

If you wish to buy direct from out wholesale jobbers —
In the East: Merit Food Co., Inc., Box 177, Bally, Pennsylvania (215) 845-2125
In the Caribbean: Malta Corona Gym, 1504 Fernandez Juncos, Santurce, Puerto Rico

WEIDER'S WILDCATS

Helps A Fellow...

- ***Feel Secure . . .***
- ***Feel Sensationally Self-Confident***

YOU CAN'T SWING WITHOUT PROTEIN

Proteins Put Snap, Crackle and Pop into Your Workout–Fun–Life

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CURT HARPER: HOW HE TRAINS

(Continued from page 49)

career in 1962, having won both the Central Collegiate Championship and the NAIA Championship in the discus throw. Both accomplishments were firsts for a Northern Michigan athlete. Curt's marks of 55′ 2″ in the shot put and 174′ in the discus still stand as records at Northern Michigan and it looks as though it will be some time before they'll be broken.

While at Northern Michigan, Curt began dating the girl he later married. Judy Harper was a coed at the university when they met.

During summer vacations, Curt competed for the Milwaukee Track Club, chalking up impressive victories throughout the Midwest. He also worked out at the Deutscher AC in Milwaukee, a weight lifting club where he picked up many valuable pointers on strength training.

In 1963 Curt moved westward to attend graduate school at Utah State University, where he earned a Master's degree. At Utah State, Curt had the opportunity to work under the tutelage of Ralph Maughan, a world-famous discus coach. Maughan coached both L. Jay Silvester and Glen Passey, who won NCAA discus crowns while competing for Utah State.

While attending graduate school, Curt also began to experiment with improvements in his discus technique. With pointers from Coach Maughan and working out with Silvester and Passey in the relatively warm Utah climate, Harper began to see signs of improvement. He continued to train hard with barbells and still holds the record for Utah State University in the three Olympic lifts, having Totalled 860 pounds via a 260 Press, 260 Snatch, and 340 Clean and Jerk.

Curt Harpers' power amazed the other top discus throwers, for he could throw almost as far from a standing position as he could with a spin across the circle. Neither Silvester nor Passey could match Harper's strength in the weight room, and it seemed it would only be a matter of time before he caught up to them in the discus circle.

I discussed Curt with the great shot put/discus champion Parry O'Brien. O'Brien, a weight trained powerhouse who became the first man to put the 16-pound shot more than 60 feet, said he was amazed by Curt's tremendous strength. Coming from O'Brien, that's quite a compliment. Parry also commented, "As soon as Curt masters the technique, he will be knocking at the door of stardom."

After acquiring his Master's degree at Utah, Curt packed his bags again and moved farther west to California, where he is currently teaching science in the Santa Barbara school system. Here again Curt found himself surrounded by topnotch discus throwers, excellent training conditions, and what he needed most—the best competition possible.

Curt joined the LA Striders and has been competing for that excellent club in recent years. After 12 years of very good discus throwing, Curt finally came into his own last season, earning world class ranking when he threw the platter 199′ 5″—only seven little inches short of the magic number, 200 feet.

By the time he had developed his discus technique to the point of knocking on the 200-foot door, Curt's rugged training and Judy's home cooking had combined to bulk him up to 255 powerful pounds. As an indication of Harper's strength, he has scored official power lifts of 405 pounds in the Bench Press, 450 pounds in the Squat, and 550 pounds in the Deadlift. His impressive training schedule, which follows, would be hard for any but the strongest of weightmen to match.

Curt's pre-season training starts in the beginning of January and continues until the end of March. During all of his training sessions Curt does the following exercises as a warm-up and in between sets: Situps, stretching exercises, waist twists, leg raises, and rope jumping. His Monday and Friday workouts in the weight room go like this:

Bench Press—9 sets—10 repetitions with 135 lbs.; 8 repetitions with 225 lbs; 4 repetitions with 300 lbs.; 2 repetitions with 345 lbs.; 3 repetitions with 370 lbs.; 3 repetitions with 370 lbs.; 3 repetitions with 370 lbs.; 10 repetitions with 300 lbs. (narrow grip); 10 repetitions with 300 lbs. (extra wide grip).

Curt uses a wide grip in performing the Bench Press in order to put a maximum stretch on the pectoralis muscle group which is so important in the discus. Next Curt works on his legs, employing a weight machine. He starts by doing the Leg Press and finishes his workout with Leg Curls, as follows:

Leg Press—4 sets—15 repetitions with 240 lbs.; 15 repetitions with 320 lbs.; 20 repetitions with 380 lbs.; 10 repetitions with 420 lbs.

Leg Curls—3 sets (weight machine)—10 repetitions with 70 lbs.; 10 repetitions with 100 lbs.; 10 repetitions with 120 lbs.

Curt, like most top weight event men, recognizes the importance of leg work for discuss throwers and shot putters. The need to get across the discus ring as fast as possible together with the importance of the final thrust at the time of delivery necessitate a concentrated workout on the legs.

On Wednesday Curt utilizes the same exercises as a warm-up and in between sets. His weight training is abbreviated in that he only does two exercises, both of which are performed on the weight machine.

Incline Press—8 sets—10 repetitions with 150 lbs.; 10 repetitions with 200 lbs.; 6 repetitions with 250 lbs.; 6 repetitions with 300 lbs.; 6 repetitions with 330 lbs.; 6 repetitions with 330 lbs.; 10 repetitions with 250 lbs.; 10 repetitions with 250 lbs.

Leg Extensions—4 sets—15 repetitions with 130 lbs.; 15 repetitions with 200 lbs.; 15 repetitions with 250 lbs.; 15 repetitions with 275 lbs.

Providing there is no rain on Tuesday, Thursday, Saturday, or Sunday, Curt will throw for an hour or two in addition to doing some isometric work. The isometrics are limited to simulating the lifting positions in his weight training and the various positions he assumes in throwing the discus. His throwing sessions are devoted entirely to the perfection of his technique. He does not throw for records in practice. Curt always takes Judy and their two children along to practice. Their son, John, is three years old and their daughter, Christie, is just one. Judy has devoted a considerable amount of time to studying films of Curt and other great discus throwers and now knows exactly what Curt should be doing at all times. Judy watches each throw as a critical analyst, pointing out flaws to Curt so he can work toward his goal of attaining perfect technique. He takes a great deal of time concentrating during these training sessions, and thus he is able to only get off about 20-24 throws per hour. This is one attribute that too few of our athletes possess: deep concentration. Upon completion of his throwing, Curt will run three 100-yard dashes or four 50-yard sprints.

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As the track season progresses (April and May), Curt works mainly on explosiveness and quickness in all of his lifting. His weight lifting workouts remain the same with the exception that he adds bent-arm lateral raises, supine, to his routine two days per week, as follows:

Bent-arm lateral raise, supine (dumbbells)—8 repetitions with 35 lbs. (each): 8 repetitions with 45 lbs. (each); 8 repetitions with 55 lbs. (each); 8 repetitions. In addition to his weight train-

He eliminates the Friday workout in order to rest the day before competition.

In June, July, and August Curt will throw three days per week in practice and once per week in a meet. During this time, he entirely eliminates weight training.

Curt will commence his weight training again in September when the lid comes down on the track season. His routine is quite similar to the one he follows in the beginning of the year, except that he performs slightly less repetitions. In addition to nis weight training, Curt keeps in condition during post-season training by playing basketball in the warm California sun.

If you happen to be passing through Santa Barbara in the near future and see a family out together playing with a discus, you'll know who they are and that they are work toward a goal—a 200-foot-plus throw next track season.

EX-FOOTBALL PLAYER KEEPS IN SHAPE

(Continued from page 37)

About 15 years ago, no longer active in semi-pro football with the Jessup Leopards of the Lackawanna County League, he took up weight lifting for the fun of it. He wasn't intensely serious about it, but he did collect a couple of trophies in Middle Atlantic area meets. Then the club he belonged to died out from a lack of local interest and Bill drifted away from regular exercise.

After a few years of relative inactivity—during which time he never missed a meal—Bill found that his weight had crept up over the 250 mark. He noticed that he did not feel as well as he had when he was a vigorous young football player and weight lifter. Worse, his doctor told him his blood pressure had risen to a threatening level, 180 over 100, and prescribed drugs to keep it down.

Deciding he'd better do something more about his physical condition than take blood pressure drugs and try, fruitlessly, to diet, Bill looked up a couple of his old weight lifting buddies who were still active in a conditioning program, exercising in a basement home gym. Although his doctor had told him not to lift weights, Bill couldn't enjoy exercise that didn't pose a challenge so he began doing some easy Bench Pressing, up to 20 pounds, sets of Power Cleans with around 135 pounds, and Parallel Squats with 170 to 200 pounds. When these exercises began to feel awfully easy for five repetitions, he increased th poundages . . . gradually.

To make a long story short, in a few weeks' time Bill worked his strength up pretty close to where it had been when he was a competitive weight lifter. He got so he could handle from 250 to 280 pounds in the Bench Press without straining and he pushed himself in the Squat to the point where he made two repetitions with 400 pounds shortly after his 40th birthday. He also worked out fairly regularly on a stationary exercise bicycle and occasionally worked in some jogging at the local high school track.

After only six months of this relatively moderate training, Bill found that his weight had dropped some 20 pounds and—best of all—his blood pressure was down to 138 over 80 so that it was no longer necessary to take drugs to keep it down.

Officer Zorichak is a prime example of the benefits of exercise for an ex-athlete. He is of the physical type that thrives on heavy exercise, being naturally endo-mesomorphic. He is massively constructed whether he exercises or not, but when he exercises he feels better, and his doctor's findings indicate that he is healthier.

The exercise routine that Bill follows is not difficult or time-consuming. The only aspect of it that puts it out of the reach of any average husky guy is that he occasionally handles some pretty heavy weights. The fact is, he only works out when he feels like it and almost never tackles a weight that requires a really all-out effort. A person who wasn't interested in lifting 250 pounds or more could derive similar benefits from doing more repetitions in the exercises with lighter weights.

Most current approaches to fitness concentrate on jogging or similar endurance activities. Bill's approach, however, may be better for naturally stocky types. By toning up his muscles to a good level of strength, Bill finds that —even though he's still very heavy for his height—his strength is adequate to move his bulk and jogging is not difficult for him. Another benefit of his training, Bill feels, is that stronger arm and shoulder muscles improve his pistol shooting, very important for a policeman. "Pointing the .38 is as easy as pointing your finger when you're used to handling a 200-pound barbell," Bill says.

For policemen, ex-football players, or any husky guy who feels he'd like to try for some exercise that will benefit his physical condition without taking all his spare time, here's the simple routine Bill Zorichak followed to trim off 20 pounds and greatly improve his over-all physical condition:

Mondays and Wednesdays

Power Clean with barbell—135 pounds x 5 repetitions; 155 pounds x 5 repetitions; 170 pounds x 5 repetitions (occasionally working up to 200 pounds or more).

Supine Press with barbell—135 pounds x 8 repetitions; 185 pounds x 5 repetitions; 200 pounds x 5 repetitions; 220 pounds x 5 repetitions; 240 pounds x 3-5 repetitions; 250 pounds x 1-3 repetitions (occasionally working up to 280 pounds).

Parallel Squat with barbell—170 pounds x 5-8 repetitions; 240 pounds x 5 repetitions; 290 pounds x 5 repetitions (occasionally working up to 350-400 pounds).

Tuesdays, Thursdays, and (often) Saturdays

Bending and stretching calisthenics.

Run in place or jumping jacks for 1 to 2 minutes.

Fifteen to 20 minutes of pedaling stationary bicycle with resistance set as equivalent to 20-25 m.p.h.

Ten Curls and 10 Presses with a pair of 45-pound dumbbells.

The exercise program Bill Zorichak follows takes him no more than a half-hour, except when he gets into a bull session with his buddies or decides to include a couple of extra exercises or work up to a heavier poundage for the fun of it. He thinks it pays big dividends in the way he feels and in the improved physical efficiency it gives him as a policeman.

Those are the facts. Just the facts.

TRAINING FOR LEG POWER AND JUMPING ABILITY

(Continued from page 45)

a variety of ways, with many highly individualistic approaches gaining favor with successful mentors. There are many similarities in approach, however, such as developing the ability to score by the repetitious process of shooting under various conditions. Likewise, dribbling and passing are developed through practice under varying conditions.

Rebounding can be made successful in one of two ways: (1) by being lucky or a good enough recruiter to obtain players from 6′ 10″ to 7′ 2″ in height; or (2) developing leg power in athletes who are more nearly average in height.

Having worked with basketball teams at Southern Illinois University (1967 N.I.T. champions) and Lake Superior State College (18-5 record in 1968), I have seen two teams with height disadvantages control the ball consistently in their games. Many factors contributed to the success of these teams, but superior jumping ability by relatively "short" men predominated.

How is this jumping ability developed? I knew that it resulted from applied strength training programs at Southern Illinois and Lake Superior, but for further information I wrote to top basketball coaches throughout the country to learn what training methods they recommended for developing jumping ability. Their responses showed that the following exercises, in the order of most frequent use, were employed by the majority of winning coaches:

1. Deep Squat with weights.
2. Half Squat (to parallel) with weights.
3. Isometrics.
4. Step up on bench with weights.
5. Leg extensions with weights.
6. Deadlifts with barbell.
7. Free hand vertical jump practice.

We then conducted an experiment to determine which of these exercises were most effective in developing vertical jump ability. The experiment was designed so that both trained athletes and untrained non-athletes could participate. This would enable us to determine which exercises were most effective in improving the trained men and which were most effective in improving the untrained men, if there was a difference in results.

We also hoped to learn whether height and weight of the participants were factors in vertical jumping ability.

A total of 160 college students served as test subjects, 80 athletes and 80 non-athletes. Each group of 80 was subdivided into eight groups of 10. Each of seven groups was assigned to practice one of the exercises recommended by the surveyed basketball coaches and the eighth group (10 athletes and 10 non-athletes) was assigned no training to act as a control.

Before training began, the vertical jump ability of each of the 160 subjects was tested as follows: A vertical jump board marked off in one-half inch increments was attached to a backboard on the basketball court. Tape markings were placed on the floor for the subject to stand on when he started his jump. This insured uniformity of all tests, enabling the subjects to jump from the same spot on all attempts, both before and after the training period.

In measuring the vertical jump, the subject would first stand on the mark and extend his arm up along the board as high as he could reach while standing flat-footed. The height to which he reached was recorded. The subject then would jump vertically from the mark—no approach steps were allowed—extending his arm up the board. Each subject was given three attempts and the highest jump was the one recorded. Three testers carried out the experiment, one acting as a recorder and the other two as measurers. The same procedure was utilized in the post-training test, which took place 10 weeks later, after all training sessions were completed.

All subjects trained three days per week, Monday-Wednesday-Friday, for approximately 15 minutes per session on the exercise to which they were assigned. The control groups did no exercise, of course, participating in only the pre- and post-training tests. In the exercises that required weight resistance, the subjects used resistance that took maximum effort to complete the repetitions and increased the weight whenever they could handle more.

The subjects who trained with Deep Squats performed six sets of three repetitions against maximum resistance during each session. The subjects who trained on Half Squats did the same, the difference in performance being that they flexed their legs only to the point where their thighs were parallel to the floor while the deep squatters went below parallel.

Subjects training on bench stepping carried a dumbbell in each hand and stepped up to a 28-inch-high bench, alternating legs for six sets of three step-ups with each leg.

Those training on leg extensions used weighted boots and worked their legs from 90 degrees to full lockout. Those doing Deadlifts raised the barbell from the floor with a simultaneous leg and back extension, coming fully erect with each repetition.

The subjects who trained on vertical jumps performed 15 allout efforts per training session.

After obtaining all the test data, calculations involving linear regressions were performed that showed there were no significant correlations between height-weight and predictability of performance on training procedure. The closest correlation was .05892 for height and weight versus the jumping ability of the athletes after training, which accounted for less than one per cent of the variations in jumping height.

The table below shows the mean gains in jumping ability of the 80 athletes in order, from the training method that was most effective down to the one that was least effective. The least improvement, not surprisingly, was registered by the untrained control group.

Method	*Mean gain, inches*
Step on bench	1.75
Deadlift	1.64
Half Squat	1.59
Deep Squat	1.25
Isometrics	.75
Leg extensions	.70
Vertical jump	.54
Control	.09

The data were analyzed for statistical significance by means of the t-test and it was found that significant improvements were achieved only by the first three groups. It is also worth noting that, statistically speaking, there were no signicant differences between the results obtained by these three groups. That is, the differences between the results obtained by the athletes training on bench stepping, Deadlifts, and Half Squats and the control results were so great that they should not be attributed to chance. The differences in the results obtained by these three methods are so slight, however, that they could be due to chance, such as having one or two athletes with exceptional potential in one group and one or two with little potential in another.

The results obtained by the 80 non-athletes also were tabulated and are shown below.

Method	*Mean gain, inches*
Half Squat	2.69
Deep Squat	2.39
Deadlift	2.39
Leg Extension	2.34
Step on bench	2.25
Isometrics	1.89
Vertical jump	1.75
Control	1.00

As the table shows, all of the training methods produced more significant gains among the non-athletes than among the athletes, probably because the athletes already were well trained and there was less room for improvement. If we consider only methods that yielded statistically significant improvements in both groups, however, Half Squats produced the best results. The athletes improved 1.59 inches and the non-athletes 2.69 inches.

The method that improved athletes and non-athletes about equally was the step on bench, producing mean increases of 1.75 and 2.25 inches respectively. The difference between these two means is not statistically significant.

Our results, after analysis, suggest the following conclusions:

(1) Height and weight of young men, athletes and non-athletes, has no significant effect on their vertical jumping ability. Therefore, jumping ability cannot be predicted on a basis of height and weight.

(2) Successful training methods for athletes and non-athletes differ slightly, a difference that may be attributed to (a) previous training by the athletes; (b) better quadriceps development on the part of the athletes; and (c) better coordination by the athletes.

The difference is most noticeable in the case of leg extensions. On the other hand, similarities in results suggest that anyone—athlete or non-athlete—who wants to improve his leg power and vertical jumping ability should do the following exercises: Half (parallel) Squat, Deadlift, Step on Bench, and Deep Squat. The vertical jump test as we performed it is considered one of the most basic assays of leg power. Such leg power is critical in almost all sports, which indicates the great usefulness to athletes of the exercises that produced significant gains.

Since everyone must spend much of his lifetime on his legs and since leg strength is valuable in both work and play, no one can afford to neglect training on these result-producing exercises.

(*Note:* The Industrial Engineering Department of the Algoma Steel Corporation, Limited, of Sault Ste. Marie, Ontario, Canada, assisted in the analysis of the data obtained in our experiment.)

CONDITIONING FOR SPORTS

(Continued from page 31)

load in most cases has reached its yearly maximum and is then gradually reduced. However, the intensity of training should still be increasing.[16]

During the preparation phase fitness training, after reaching its maximum load, is gradually replaced by more skill work. Weight training is reduced but the work is more explosive and, depending on the needs of a specific event, may be used less frequently. The number of circuit training sessions might need reduction to allow room for the extra attention now directed towards the practice of skills. The long slower runs, designed to improve the capacity of the heart and to adjust the psychological attitude, are changed to shorter distances covered faster. Endurance training switches to work that concentrates on the type required for a particular task.

"During the preparation phase the training focus is slowly shifted from physical conditioning to direct preparation for the competition to come."[17] This is done gradually to ensure that the athlete can take full advantage of the newly achieved level of physical fitness by introducing more skill training without allowing the fitness level to drop. It is emphasized that this can be achieved only with well planned gradual changes from fitness in the early stages to skill work towards the end of the phase.

The wise planning of work during the preparation phase has a decisive influence on the competitive performances. Mistakes made here are hard to correct during the competitive season when regular weekly competition makes it difficult to make good any omissions from the preparation phase.

Competitive Phase. The first part of the competitive season is overlapped by the preparation phase. This means that competitions are introduced more as tests of the work done and in such a way as not to interfere with the training. This is naturally only possible in individual sports where the competitive season usually starts with unimportant competitions and the championships are held in the second half of the season. In team games where every win counts the training plan must be adjusted to have the team in the best possible form for the opening match.

When the change to the competitive phase has been made, training should gradually be altered to allow longer recovery periods before competitions and the number of training nights per week might be reduced. Usually harder and more intensive workouts are kept to the early part of the week although in some cases this might not be essential.

Should the competitive phase be too long a special build-up may be necessary before an important competition or period of competitions. In that case the plan will be a little different. For instance, after a competitive period of some months, the athlete without rest may move back to a short combination of foundation and preparation phases. A hard, fast interval of physical conditioning and a phase of special skill practice followed by a short recovery period should lift his performances to a new improved level.

"It is usually experienced that performances may not improve immediately after the training load is reduced. However, an increase of intensity should cause rapid improvements."[18]

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PROTEIN NEEDS OF ATHLETES

(Continued from page 41)

ing the role of protein in the diet is only partly true.

To begin with, protein is not metabolized to any great degree during muscular exercise by a well-nourished person. The first fuel of importance to be burned is carbohydrate, then fat, and then protein in some amounts, provided that the person's storehouse of the other two energy foods has been completely used up. Turning our attention to the Japanese and Chinese it is easy to see that these people have been of rather slight muscular build because their diets are quite high in carbohydrates and starches and low in protein. In recent years, when significant amounts of protein have been added to the diet of these people, significant increases in body weight, muscle size, and height have been reported. In fact, since the Japanese have increased the protein in their diets, the average height of the Japanese people has increased over several generations.

Requirements for protein are not increased significantly during exercise unless at the same time an increase in muscle mass is taking place. By this is meant that unless the athlete is doing work that will increase muscle bulk and size, such as weight lifting, it is pointless to ingest additional protein. A long distance runner, ingesting large amounts of protein, would not achieve any appreciable effects from the protein in attempting to increase his long distance running ability or muscle mass. Because of the fact that endurance running is not progressively resistive it does not have the large muscle producing effect that is seen so dramatically in weight training.

In a carefully designed study of the metabolism of protein, several persons were subjected to a rigorous training program for one month. It was observed that as the training progressed the nitrogen balance as determined by stool samples became positive. When the regular diet, containing 1 to 1.5 grams per kilogram of body weight of protein per day, was fed, retention of nitrogen was small. However, when the protein intake was increased to 2 grams or more per kilogram of body weight per day, an increasing amount of nitrogen was retained. Investigations have shown that there is a positive relation between nitrogen retention in the muscle tissue and level of strength. When nitrogen level is high, muscles seem to be stronger and can put out a much more powerful effort.

Changes in reserve protein during training for heavy muscular work also were studied and it was found that early in training the hemoglobin and albumin contents of the blood decrease. The degree of decrease in these blood proteins and the rate of their recovery are apparently influenced by the amount of protein in the diet. The higher the dietary protein intake, the smaller is the decrease in hemoglobin and albumin levels at the beginning and the sooner the return to normal. From these findings it can be concluded that protein accumulates in the muscles at the expense of blood protein.

It is recommended that, during training programs involving heavy muscular work, an excess of protein be consumed. Such a diet would help to prevent anemia and permit the muscle mass to increase in size more rapidly. Many times athletes ingest iron and vitamin tablets hoping to stave off blood deficiencies. What they really should be doing is to increase their protein intake which in turn will increase the hemoglobin level of the blood. When the blood level is high with hemoglobin the muscles can extract greater amounts of protein for their own use. This notion makes good sense because the only link that the muscles have with nutrients is

(Continued on page 84)

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PROTEIN NEEDS OF ATHLETES (Continued from page 81)

through the blood supply.

A word of warning is now in order. Some athletes and fitness seekers might think that if some protein works well to increase muscle size and strength, large amounts of protein will work better and more muscle size and strength will follow. This is not entirely true. More muscle size and strength will follow but fatty tissue also will accompany the increased muscle mass. Protein, like any other food that is placed in the body in excessive quantities, is changed chemically for storage in the muscles and under the skin as fat. Many body builders eat 400 to 500 grams of protein daily thinking this additional protein will burn the fat off. Yet these same people find it most difficult to train to a lean and hard muscularity. This is because there is too much protein in the blood and it is converted to fat by the body.

A safe rule to follow concerning protein intake is to eat 2 grams of protein for every 2.2 pounds (1 kilogram) of your body weight. It also is recommended that athletes who are trying to train down fine for competition reduce their carbohydrate intake to almost zero. But the protein intake should not be increased over the above recommended dosage.

For strength athletes, the same formula should be followed, but without restriction of carbohydrates. Remember, any food, whether it is carbohydrate or protein, will be stored as fat if taken in excessive quantities. If you want to gain weight, increase your carbohydrate intake. To drop body weight, reduce carbohydrate intake to almost zero, but maintain an adequate protein intake.

EDITORIAL (Continued from page 7)

is motivated to train his body into superior fitness in order to make the team or just because he enjoys having a sound body to carry his sound mind is a youngster who is going to have a lot of sensible resistance built in when some degenerate proposes indulging in physically harmful "kicks" like taking drugs. The youngster who proves his manhood by matching the athletic efforts of other healthy young men feels less need to prove himself by anti-social acts.

A young man who is motivated by no more noble aim than to develop bulging biceps so as to look good on the beach is going to do himself a lot more good than one who considers exercise and physical fitness for squares and therefore goes in the opposite direction to indulge in smoking, drinking, and that ultimate "intellectual' 'absurdity, injecting himself with LSD.

There is a tendency for many people to feel uncomfortable in the presence of the extraordinary, giving rise to a "sour grapes" reaction. Thus when a well-built young man with a haircut distinguishes himself as an athlete, his less gifted or less dedicated contemporaries may express their envy negatively by deriding his efforts. This is at least partly because it takes some real effort, self-discipline, and dedication to participate in any sport—and the long-haired detractors aren't made of that kind of stern stuff. Being weak sisters, they hope to remake the world so the worthless will be proclaimed worthy, the weak will be proclaimed strong, and traditional values will be overturned in general. The guy who can't measure up calls for a shorter yardstick or for no yardsticks at all.

Young men have a perfectly natural urge to assert themselves, to be "different." How much more admirable it is for them to be different from others by running or swimming faster, jumping higher, throwing farther, and by being stronger and better built than by wearing outlandish clothing and flowers in their hair.

We've noticed that a lot of young people who start exercising so they can make the team or look good at the beach continue to discipline themselves beneficially throughout their lives. Dr. Peter Karpovich conducted a study some years ago in which he found that students who exercised regularly also seemed more regular in their scholastic work, since they had higher college grades on the average than students who did not exercise.

Self-discipline and positive thinking can be learned in many ways; among them are regular practice of strengthening and conditioning exercises, subordination of self in devotion to athletic team success, and a general physical fitness orientation in life.

ASK THE COACH (Continued from page 27)

approach to training.

Q "I keep hearing about the importance of eating meat at every meal. Is it really that important to an athlete?"

A Not necessarily. Certainly much of the protein value found in lean meat can be obtained from milk, eggs, and various vegetables. Fish, of course, is one of the best protein sources. Meat does provide an invaluable source of all the vitally essential amino acids, but it is also possible to obtain them all from a variety of vegetables. Meat at every meal is not indispensable, but it does make nutritional planning easier since any meat will provide the full spectrum of essential amino acids without it being necessary to balance them out as you should if you are consuming only vegetables.

Q "Even though I work out vigorously and frequently, my strength seems to remain the same. Both my Press and Bench Press have been stuck at the same weights for months. What causes this, and is there anything I can do about it?"

A It is well known that psychological states have a marked effect on strength performances. Emotional factors, such as feeling sensitive, shy, submissive, and timid can inhibit powerful effort. Or you may have reached a point of "staleness" in which a complete change of routine may put you back on the track toward strength gains. You may have become disinterested in the training activity, or the particular approach you have been using. Any of these factors could affect the limit poundages or maximum repetitions you can handle. You might find that a brief layoff or switching to a different type of activity—such as gymnastics—for a time will enable you to return to more productive strength training later. You might begin to move ahead again simply by varying your pressing angles, hand spacing, and sets. Each individual is different, but it pays to keep striving for a high level of training performance. Your success is proportionate to it.

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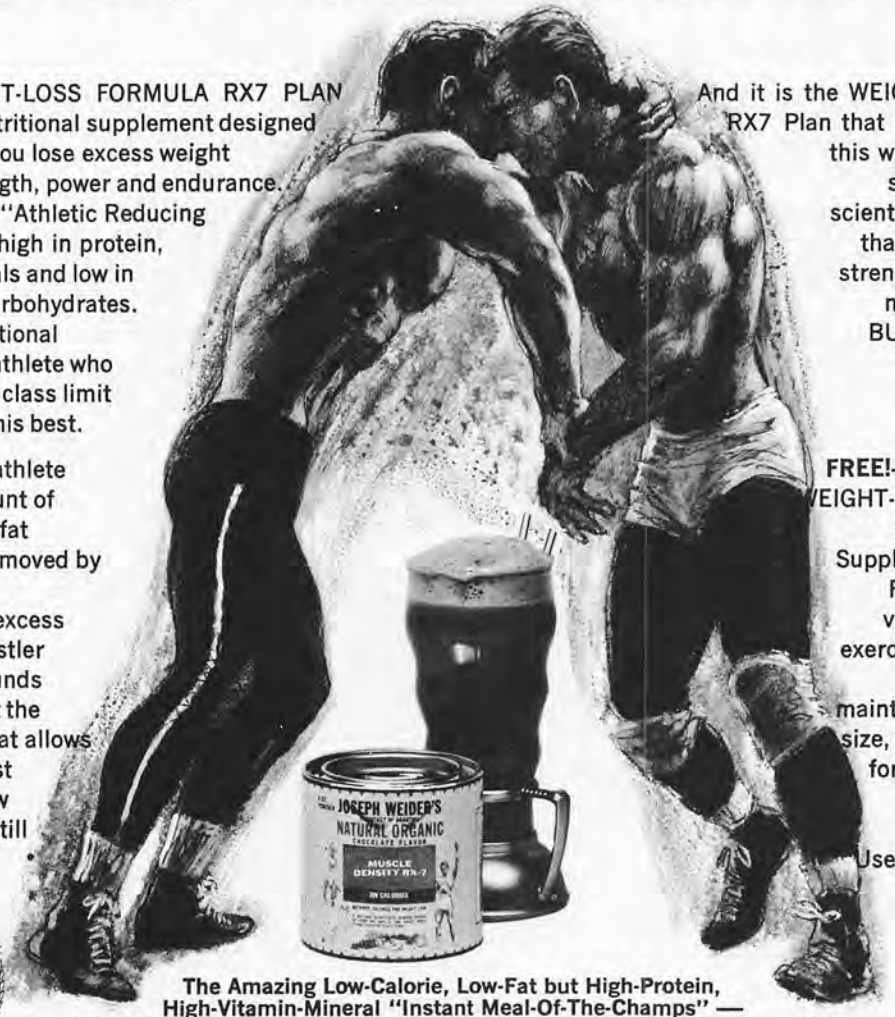

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SPORTS RESEARCH CENTER

(Continued from page 9)

cise or a therapeutic technique does not necessarily mean that he has learned it or will carry it out. Some patients require daily supervision of exercise."

GUARDS COMBINE SPEED, POWER MORE THAN OTHER FOOTBALL PLAYERS

In a study of the speed and power of football players by position, David L. Costill and his associates at Ball State University found that tackles, centers, and guards were the most powerful and that the backs and guards were the fastest players on the team. The average guard at Ball State was found to be 5′ 11″ tall and weigh 209 pounds. Tackles and centers averaged six feet and a half-inch, and 236 pounds, and the average back was just short of 5′ 11″ and weighed 184. The ends tended to be taller and rangier, averaging a fraction over six feet tall and just under 185 pounds.

YES, I SAID COFFIN NAILS

The old-fashioned idea that every cigarette a person smoked was like adding another nail to the sealing of his coffin may have been a lot nearer to literal truth than anyone realized. Dr. D. L. Sackett and his associates at the Roswell Park cancer study institute reported in the *New England Journal of Medicine* (Vol. 279, pp. 1413-1419, 1968) that a graded increase in the severity of aortic atherosclerosis was found with increasing use of cigarettes when measured both by intensity—number of packs smoked per day—and duration—number of years of smoking. The aorta, which is significantly more affected by atherosclerotic degeneration among smokers than among non-smokers, is the main trunk by which blood is supplied to the body from the heart. Similar support for the "coffin nail" designation of cigarettes was presented by Dr. L. Garfinkel in a report published in the *Bulletin of the New York Academy of Medicine* (Vol. 44, pp. 1495-1501, 1968). Dr. Garfinkel pointed out that not only does cigarette smoking act as an independent factor in causing coronary heart disease, but that it also seems to combine with other high risk factors, such as high blood pressure, high serum cholesterol, stress, or obesity to produce a combined detrimental effect on the health of the heart and blood vessels. As the old-timers said, smoking a cigarette is like pounding down another nail to secure the lid of your coffin.

TITANIC TRACK & FIELD TWOSOME TUSSLE

(Continued from page 35)

and twice more he failed.

Then from a corner of the gym a deep voice rumbled, "Wanna see who can power clean the most, George?" From such remarks great impromptu contests are born, but seldom do they involve athletes of such national prominence. Frenn looked over at massive George Woods, who had just spoken. His face lit up. "Sure. Let's go."

Just like that we had a match going between two great heavyweight athletes. George Frenn holds the U.S. power lift records (242-pound class) in the Squat (732 pounds) and Total (for Bench Press, Squat, and Deadlift at 1900 pounds), holds the world record for the 35-pound weight throw (73′ 3½″), and had the second best hammer throw by an American in 1968 (226′ 6″ with the 16-pound weight).

George Woods can't match Frenn in total weight lifting experience, but has great agility—he can do a standing back flip—and muscular size, usually weighing from 290-300 pounds. Woods was ranked second in the world as a shot putter in 1968 on a basis of his 68′ ¼″ put with the 16-pound ball at the Olympic trials in September.

The two track and field behemoths began to chalk their hands so their grips wouldn't slip when they tugged on the barbell. Art Zeller, Weider Publications photographer, wasn't going to miss an opportunity like this, so he unlimbered his camera. "Down at the beach I get sand in the lens," Art grumbled. "Here it's chalk."

Woods stepped up to the barbell for his first attempt with 295 pounds. It zipped up so easily he looked good for double the amount. Next it was Frenn's turn and he showed the hapless barbell no mercy.

The massive shot putter loaded the bar to 315 and made another nice success. Frenn shook his head and wiped the sweat from his brow. He chalked his hands, then decided to add five pounds, bringing the total weight to 320. "You can do it, George. You can do it," he told himself, thinking aloud positively. Everyone quieted down to watch him try.

Frenn gripped the bar tightly, threw his head back and pulled with a tremendous explosion of power. He tore the weight from the floor . . . but not quite to his chest. It dropped back to his thighs, where he held it in the completed Deadlift position. Still holding the weight, Frenn looked at Woods. "Can I try again?" he asked. "Right," Woods answered. "Any way you like, as long as you get it up."

Without lowering the weight, Frenn tried to Clean it from the dead hang position across his thighs. No go. It was evident that his earlier efforts to Clean 352 had drained off a lot of power.

It was Woods' turn again. He chalked his hands carefully, stepped up to the barbell, gripped it and pulled powerfully. Almost . . . but not quite. He was so close that a three-inch dip of his knees would have fixed the weight at his chest.

This was just the encouragement Frenn needed. This time his power would not be denied and he took a five-pound lead. Not interested in a tie, Woods loaded the barbell to 325. He pulled . . . and missed. The weight crashed down, almost through the cement of the driveway. Frenn had won . . . this time.

Some of the most exciting athletic contests and greatest feats of strength are performed just this way, on the spur of the moment. Art Zeller and I had been lucky enough to be present for this one. As we were leaving, Woods was telling Frenn, "I'd like to Press 450 pounds on the incline. That's the best Dallas Long was able to do when he held the world shot put record. My best so far is 395." "I've done 400 myself," Frenn stated, "and so has Joe Demarco."

It sounded as though another contest might be in the offing, but hearing about all those heavy weights was making even my ears tired, so Art and I kept walking.

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HOW TO STRENGTHEN YOUR NECK

(Continued from page 24)

The headstrap exercise also can be repeated 10 times and you may find you prefer to go to as many as 20 repetitions. Whenever the weight feels too light, more should be added. Professional football players—the big linemen with collar sizes of 17½ and larger—think nothing of doing this exercise with 50 pounds on the headstrap.

To give some idea of the strength potential of the muscles at the back of the neck, many strongmen have been able to lift more than 200 pounds with their teeth, biting on a leather mouthpiece attached to a chain which in turn held a weight in a position similar to that in which the weight is suspended by a headstrap.

The front of the neck also can be exercised directly with a headstrap by simply reversing the headstrap and allowing the suspended weight to hang behind you. You then lie supine on a bench with the weight hanging over the end or lean back on your arms while seated and work your head backward and forward with as little body movement as possible.

In addition to direct neck exercises, such as bridging and headstrap work, the neck also responds to exercises that strongly involve the trapezius muscles that run down the back of the neck, out to the shoulders, and down into the upper back. Examples of exercises that develop the trapezius are cleans, upright rowing, and shoulder shrugging while holding a barbell or pair of dumbbells. In the clean, when you pull a barbell from the floor to your chest, your trapezius muscles work all the way, but especially after the barbell passes your thighs on the way up. In upright rowing, pulling the barbell chin high from a dead hang in front of your thighs, your trapezius and deltoid (shoulder) muscles get an intensive, direct workout.

Shoulder shrugging while holding a weight, attempting to touch your shoulders to your ears, is the simplest and most direct way to develop trapezius strength. This exercise plus headstrap work can develop slabs of muscle at the back of the neck that will withstand any of the expected and most of the unexpected impacts that occur in sports.

So try a few neck exercises in your workouts, athletes; they could save your life and almost certainly will improve your ability to take part in rough sports without painful injuries.

POWER PACK YOUR BACK

(Continued from page 38)

strength. An athlete who is able to give a good account of himself in the Deadlift is likely to excel in any sport where general basic strength is an asset.

In essence, the Deadlift is performed as follows: You stand close to the barbell, shins almost against the bar and your feet spaced comfortably an equal distance from each end. You lean forward, bending your legs, and grasp the bar with your hands wide enough that your arms will hang comfortably outside your knees as you crouch. To resist the tendency for the barbell to "roll" out of your fingers, it is a good idea to keep one palm toward you and the other away from you. Deadlifting with both palms toward you at the start is a good way to strengthen your grip, but a poor way to lift maximum weights.

When your grip is secured, you should assume what is considered the ideal position for lifting from the floor. That is, your legs should be flexed enough so that your hips are lower than your shoulders with your back straight. To lift the weight, you look up—leading with your head, you might say—and pull the barbell off the floor with a coordinated leg and back extension. The rules require that the barbell move from the floor until it is resting across your upper thighs with you standing fully erect, including having your shoulders back and your legs completely straight.

Ideally, you should maintain a flat back as you lift, but with heavy weights it is just about impossible to do this. Therefore you *try* to keep your back as straight as possible as you lift, but also should practice stiff-legged Deadlifts with *lighter* weights to develop the flexibility and resilience you need to avoid injury.

The rules for power lift competition state that you may not stop or hesitate as you raise the weight. In other words, the barbell must move perceptibly from the time it leaves the floor until you are standing fully erect. You will be disqualified in a contest if you pull the weight to your thighs and then lean back to slide or hitch it up from there, since this constitutes a break in the smooth upward motion of the barbell. You will not be disqualified if the weight moves slowly, however, as long as the movement is continuous and perceptible.

Naturally, artificial aids are prohibited in competitive deadlifting. Whereas many athletes strap their hands to the bar to aid their grip in training, especially for repetition lifts, no artificial grip assistance is permitted in meets. Nor are you permitted to put grease on your thighs, to help the barbell slide up smoothly.

The best way to train for the Deadlift is to do Deadlifts. As I mentioned earlier, it is a good idea to do some Deadlifts—with relatively light weights—with your legs straight. This stretches and strengthens your back muscles more directly than the regular Deadlift with knees bent, in which your legs help a lot in raising the weight.

Low repetitions are best for developing great strength and power, especially since you will not be able to handle really heavy weights for repetitions. You should also limit the number of sets you do in a workout, since the cumulative poundage hoisted will likely run into the tons anyway. This takes a lot of energy, so you should plan your workout carefully in order to spend your energy wisely. If you find you feel fatigued a day after heavy training, you should reexamine your living habits to make sure you are getting enough rest and adequate nutrition. If you feel that you are not recuperating adequately, you may need a high-protein, high-calory food supplement, such as Weider Crash-Weight.

In addition to the stiff-legged Deadlift with lighter weights, it also helps to place the barbell on supports, such as a pair of sturdy boxes, and practice the finish of the lift—from above the knees—with heavier weights than you can lift all the way.

The secret is to keep the repetitions low, focusing on power and good form. If you train in this manner and follow good general health practices—such as getting enough rest and good nutritional support—there is no reason why you can't make a good showing in your weight class in power lifting contests. But whether you compete or not, the great body and hand strength you can develop through deadlifting will help you excel at your favorite sport, whether it be hammer throwing, wrestling, or football.

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